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No. 457. Vol. XVIII.] FRIDAY, JULY 7, 1893. [Price Twopence.

Our Views.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—The Month—The Convention—"At Home" Discontinued—Western Sussex—Foreign Trips—Notice—The Royal Marriage.

Flotsam and Jetsam. By Anchorite.

The Month.

Letters—Lynton and Lynmouth (Clarke)—Lantern Society (Gladstone)—Leytonstone Exhibition (Bailey)—Green Fog (Isis).

Articles.—Practical Hints on Obtaining Pictures (Hinton)—The Elements of Photomicrography (Mikron)—Goerz's Double Anastigmatic Lens—Speed of Plates and Halation (Pike)—Photographic Chemistry (Conrad)—A Saturday Afternoon at the Tower (Man about Town).

Societies' Fixtures.

Holiday Resorts.—Rouen—Normandy—The Photo Fiend in France—On the South Coast—Rickmansworth—The Coast of Yorkshire.

Societies' Meetings.—Bath—Hackney—Leytonstone—Liverpool—N. London—N. Middlesex.

Illustrated Supplement.

Editorial Department—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

Terms of Subscription—

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Trade Advertisements *are received up to Tuesday morning.*

Publishing Department.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of* ***Three Words for One Penny****) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 50, Landscape.—Latest day, July 17th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, July 28th, 1893.

We again publish the second instalment of "The Month," which we are pleased to say seems to have given very general satisfaction, with the one exception of one of our contemporaries; but as the editor of the same has but two ideas in his head, which might almost serve as the motto of his paper, we do not intend to take any notice of it.

By the time this issue is in the hands of our readers the Convention will be almost over. We shall defer any notice of it and the papers read till next week, when we hope to give a full report.

That the holiday season is near is pretty evident from many signs, and in accordance with established custom we discontinue our Monday afternoon "At Home" till September the 4th, though we shall be still pleased to see any one if we are in.

If any of our readers want a but little worked field for a photographic holiday this summer we can recommend Western Sussex, and shall be glad to have the company of one or two readers in that district for day excursions.

To those who are more ambitiously inclined, and yet wish to work economically, there are two trips which are advertised in our columns this week which are specially notable for their cheapness and the special facilities for amateurs.

The Association for the Promotion of Home and Foreign Travel offers six speeial trips—one to Northern France, another to the Pyrenees, and another to Denmark and South Sweden. An itinerary, with prices, will be found on p. vii.

For the August Bank Holidays a trip to Belgium has been arranged for amateurs under the guidance of Mr. G. A. T. Middleton, a well-known architect, and as it will last for eight days, and will cover some extremely interesting ground at a very reasonable rate, it is worth attention. For further particulars see p. vi.

We wish to draw the attention of our readers to the following announcement:—In no case will the proprietors of the Amateur Photographer undertake to buy or sell any goods on commission, nor will they be responsible for the safety of any negatives or prints sent to the Editor of the Amateur Photographer for any purpose whatever, although all reasonable care will be taken of the same.

The Editor claims the right of refusing any print, lantern-slide, etc., sent in for competition, without assigning any reason for such refusal. The judges' awards in any competition shall be final.

THE royal marriage day being observed as a pretty general holiday, and traffic being impeded so much, we have been compelled to go to press earlier than usual, and therefore several matters have been obliged to stand over till next week.

DOUBTLESS there will be many snapshots, both good and bad, of the royal procession. If any of our readers are fortunate enough to secure a good result, and will let us have a print, we shall be very pleased to reproduce it.

Flotsam and Jetsam.

A BOOK on "The Points of the Horse" is announced for publication this month which should have an interest for photographers as well as for "veterinarians," if such a word may be allowed. It is by Captain Hayes, who is great on horses and on photography too. He has combined the two tastes, and designed a special camera for photographing horses while going at top speed.

ABOUT eighty of these are promised for his book, and there will, no doubt, be those who will watch for them carefully to see how they compare with the work of Professor Anschütz. Captain Hayes has great advantages in this kind of work, because of his almost unrivalled equine knowledge.

ILKLEY, in Yorkshire, where the annual summer meeting of the National Home Reading Circles Union began last Saturday, is one of the most delightful holiday resorts in the kingdom. Its wind-swept expanse of moorland looking over the fertile Wharfedale, its bracing climate, its central position for excursionists, and its numerous "hydros," all combine to make it hard to beat.

JUST NOW, of course, it is full of visitors, and every tenth man, at least, seems to be an amateur photographer. The neat and natty hand-camera is a great favourite, and in the hands of the tourist in knickerbockers caricatures most comically the small black bag of the business man. The tripodist toils painfully along under his heavier burden, alternately grumbling at the heat and looking delightedly at the thousand pictures Nature has made ready to his hand.

THERE is a glen winding up the hillside to the moors called "Heber's Ghyll" which makes a fairy picture at every turn. Bolton Abbey, with its matchless woods, its waterfalls, and its rushing stream, is within easy driving distance, and all along the roads run dusty and very dirty Yorkshire urchins, calling out in Runic rhymes:

Hip, hip, hip, hooray!
Give us a penny this fine day!

CHARMING figure-studies they would make, worthy of the brush of Mrs. Stanley and of the most careful art of any photographer. If only one could photograph this broad Yorkshire mother-tongue as well! And for river scenery there is the Wharfe winding in lazy turns through the long broad dale. It is a perfect photographic paradise.

PROBABLY one of the biggest collections of photographs in the world is, or, at any rate, will soon be, that of the Admiralty authorities. According to the *Daily News*, they have entered into a contract with Messrs. Waterlow for the supply of photographs of every section and component part of the men-of-war in the British Navy. The collection is made the more valuable by the addition of as many photographs as possible of the vessels of foreign navies.

HERE is a good specimen of Daily Telegraphese, taken from an article commenting on the *Studio's* examination of the R.A's as to the camera and its relations to Art.

"When in a photograph portrait we are confronted by a gentleman the crown of whose hat, owing to bad focussing" (how kind to give the reason!) "is thrice the size of his head, and whose feet appear to be afflicted with elephantiasis, or by a lady, one of whose arms is like a mangold-wurzel, while the other has the dimensions of a very attenuated radish, we are forced to confess that the camera is not always an infallibly pourtrayer of form."

How often, the query naturally arises, is one confronted by such an abortion of a photograph? The remainder of the article, in which the hand of a well-known writer may be recognised, is far more interesting. It places the genesis of photography as far back as 1802, and gives the honour of the discoverer's place to Thomas Wedgwood, the brother of "the famous potter of Etruria." ANCHORITE.

Letters to the Editor.

LYNTON AND LYNMOUTH.

SIR,—No plates can be obtained in the above mentioned places at the dealers mentioned in the Annuals. Publication of this may save disappointment.—Yours etc., E. S. CLARKE.

* * * *

THE LANTERN SOCIETY.

SIR,—At a special meeting of the Lantern Society held recently, it was resolved that the subscription for all members should in future be ten shillings a year. Subscriptions are due on October 1st, and members joining between now and that date pay no further subscription until October 1st, 1894.—Yours, etc.,
CHARLES E. GLADSTONE (COMMANDER),
Hon. Sec.

* * * *

LEYTONSTONE CAMERA CLUB SECOND ANNUAL EXHIBITION.

SIR,—Owing to the great success and overcrowding attending our first annual exhibition, held on last November 10th, 11th, and 12th, the Council of this club have decided to extend the time this year to a week; the date is also fixed, and will be held at the Masonic Hall, High Road, Leytonstone, opening on Monday, November 20th, and closing on Saturday, November 25th. Further particulars will be duly announced, and it is earnestly hoped that our numerous photographic friends who supported us so well last year will do so again this year, when we hope to eclipse our previous efforts.—Yours etc.,
Rose Bank, ALBERT E. BAILEY,
South West Road, Leytonstone. *Hon. Sec.*

* * * *

GREEN FOG.

SIR,—It has occurred to me that one of the causes of green fog may be traced to keeping the ammonia and bromide mixed, as was formerly the custom. Anyhow, having for a special subject reverted to this method, I found green fog rampant. As it occurred with and without sulphite, and with and without distilled water, I threw away the ammonia and bromide solution, and used the two separately. The very next plate of same batch was without a sign of the nuisance. This may be a fluke, but I am inclined to think the "mare's nest" is by no means a certainty.—Yours, etc., ISIS.

The Month.

As some of the magazines and journals reach us rather late, we include abstracts which should by right belong to the previous month. We do not include abstracts from the AMATEUR PHOTOGRAPHER, on the assumption that those who read this summary are constant readers of our paper.

On Some Light Sensitive Substances.

R. E. Liesegang has been experimenting with various salts, with the following conclusions:—Bismuth chloride formed by dissolving bismuth carbonate in hydrochloric acid, and the solution spread on paper, quickly gives an image. A well-sized paper soaked in above solution turns brown in light as quickly as silver chloride, but without the intensity of colour. Sugar, gum, and alcoholic resin solution increase sensitiveness and intensity, and yet give white ground. Sodium carbonate delays the coloration, whilst glycerine added to above makes it absolutely insensitive. Citric and tartaric acids reduce the sensitiveness, and more strongly still alkaline chloride and bromides. The colour disappears when the exposed paper is kept in the dark. The image cannot be developed with neutral or alkaline pyrogallol, amidophenol, or metol. Gold chloride is reduced to metal on the image giving a vigorous violet-black print. Silver nitrate, chloroplatinite of potash ferro- and ferridcyanide of potash will not develop it. A mixture of bismuth chloride and gold chloride gives an intense grey-black and finally deep blue black image in quarter of an hour in diffused light, which image does not disappear when kept in the dark. Paper saturated with potassium ferric oxalate, and dipped into a concentrated solution of ammonium sulphocyanide, is a deep sienna red, which is bleached by light in a few minutes; in the dark the colour returns, but after six hours the exposed parts are darker than the unexposed. Paper treated with sulphocyanide and citric acid is bleached by light. Sized paper treated with sulphocyanide and zinc chloride becomes red by exposure. Paper treated with sodium tungstate and citric acid gives a bright blue positive which can be intensified with silver nitrate to reddish-brown or black with nascent silver.—*Photo. Archiv.*, June 16th, p. 177.

How to see Whole-plate Binocular Pictures.

This is done as follows, presuming that the prints are pasted non-reversed on one mount with their centres $6\frac{1}{2}$ inches apart:—Two small mirrors must, as in Whealstone's stereoscope, be mounted diagonally, one opposite to each eye, and at three inches apart. A second pair of mirrors must be mounted, each parallel or nearly so to the first pair, and at a distance of one inch and three-quarters from the surface of each; these second mirrors must also be rather larger than those nearer the eyes; all the mirrors must be silvered on their front surfaces. With a pair of prismatic or ordinary lenses the whole of the pictures may be seen.—*Brit. Journ. Photo.*, June 2nd, p. 337.

Printing in Colours.

Hruza summarises the process for chromo-typography or chromo-collotypy as follows:—Three negatives are required, in one of which the yellow of the original is wanting, in another the red, and in another the blue; for the preparation of these, correct sensitisers and correct screens are required. Hruza points out that the printing ink must be complementary to the filter used, and suggests the use of Dove's method of using a double Iceland spar prism, and a rotating sector screen for finding the best printing inks.—*Photo. Corresp.*, June, p. 277.

Photography in Colours.

M. de Saint-Florent gives an account of his experiments on above subject, and states that by exposing a gelatino-bromide plate to the sun, under a coloured lantern slide, from fifteen to sixty minutes, and then fixing and washing thoroughly, the colours of the object are reproduced. It is advisable to successively use Berget's screens, red, green, and blue. The colours are brighter if, before exposure, the plate is bathed in a solution of nitrate of silver, containing a large proportion of alcohol. Gelatino-chloride plates treated in the same way give by reflexion colours complimentary to the colours of the object. Plates coated with gelatine and soaked in a solution of—

Tartaric acid	5 parts.
Ferric choloride	10 „
Distilled water	1,000 „

then rinsed, dried, and exposed under a coloured object, and well washed in warm water, and then quickly dried in front of the fire, when all the colours are visible, but blue and violet only faintly. M. de Saint-Florent has also been able to obtain colours by using bichromated gelatine on glass.—*Paris Photographe*, June, p. 210.

Uncorrected Microscopical Objectives with Colour Correct Photographic Plates.

Induced to experiment by a statement made by Dr. Piffard, of New York, Mr. Andrew Pringle gives the following conclusions he has arrived at:—

1. The objectives used were old and were corrected, as was the rule at the time when they were made, for visual rays without respect to the more actinic regions of the spectrum. The light used was limelight, the test objects various. With ordinary plates of whatever make these objectives gave images blurred to a great degree. When a yellow screen was used, of such colour and density as to increase the necessary exposure about twenty times, there was a marked improvement in the definition. When an orthochromatic plate was used without a screen there was in almost all cases a still further improvement, and when a similar plate was used with the screen described the image was found to be "absolutely sharp." In some cases the colour-correct plate, without a screen, gave a result so sharp that no further improvement could be desired or discriminated.

2. Using a "pantachromat" of Leitz on an ordinary plate without a screen and without an ocular, I got images wholly unsharp; but using the same glass on an ortnochromatic plate, both with and without a screen, I got sharp negatives. (The objective in question is not intended to be used without an ocular.)

3. Using apochromatic objectives with oculars intended for them I got sharp negatives on suitable ordinary plates, but I am not sure that even with these objectives I did not get slightly better results on orthochromatic plates. Mr. E. M. Nelson and other authorities find their results even with apochromatic glasses better on orthochromatic than on ordinary plates. The corrected plates used were "Isocbromatics," by Edwards and the Britannia Works Company. The optical and chemical theories on which these facts depend would form a very interesting subject for discussion by the Photographic Society of Great Britain.

From a pecuniary point of view these facts are important, as they show that comparatively cheap "uncorrected" objectives are available for many branches of photo-micrographic work, wherein it has been supposed that specially corrected objectives alone would yield absolutely sharp results; but the facts do not touch the use of high angular or numerical aperture so vital in "critical photomicrography.—*Photographic Journal*, May, p. 220.

Photomicrography with High Powers.

Max Toch describes briefly his method of working. He uses a $\frac{1}{12}$ inch dry objective of Bausch and Lomb, and one inch periscope ocular. The focussing screen was made by fixing an unexposed dry plate, washing thoroughly, immersing it in a solution of chloride of barium, and then, without washing, placing in dilute sulphuric acid, in which it was kept constantly on the move; a very fine precipitate of barium sulphate was thus produced. The plate was then washed and dried. The diaphragm was placed close under the object, and was a circular aperture $\frac{1}{10}$ mm. in diameter. Instead of the ordinary Abbé substage condenser, an ordinary ocular was used. An ordinary petroleum lamp was used and ortho plates, and with two hours' exposure and an enlargement of 1,200 the communication of the so-called cell walls was photographed. — *Photo. Rundschau*, June, p. 198.

The Photographing of Fine Lines.

Victor Schumann points out the difficulties usually met with in photographing fine lines of the same blocking up, broadening, and so on, and states that, with his new plates, he has been able to obtain spectrograms which stood enlarging from ten to 345 times without losing in sharpness.—*Photo. Rundschau*, June, p. 181.

Manufacture of Gelatine Dry Plates.

J. Desiré England, divides emulsion-making into three heads —mixing, emulsification, and washing. Suitable gelatine is very important: soft gelatine, like Nelson's No. 1, should be used at first, and a hard kind—Drescher's or Heinrich's—later. There are two methods of attaining sensitiveness, by heat and by ammonia. For the boiling process, the following was suggested :—

No. 1.

Potassium bromide	90 gr.
„ Iodide	3 „
Gelatine (soft)	20 „
Water	1½ oz.
Hydrochloric acid	2 min.

No. 2.

Silver nitrate	120 gr.
Distilled water	2½ oz.

No. 3.

Gelatine (hard)	150 gr.

The best temperature for mixing is 110 deg. to 120 deg. F. The time occupied in mixing the silver with the gelatine is important; it should be done slowly, stirring vigorously the whole time. The increase in sensitiveness was ascribed to continuous solution of some silver bromide in the excess of bromide of potassium, and precipitation in a coarser state. For the ammonia process the following formula was given :—

No. 1.

Gelatine (soft)	20 gr.
Potassium bromide	180 „
Potassium iodide	3 „
Water	4 oz.

No. 2.

Silver nitrate	240 gr.
Water	4 oz.

No. 3.

Gelatine	360 gr.

Convert No. 2 into ammonio-nitrate with liquid ammoniæ fort., and add to No. 1. The solution should be mixed at a temperature of about 105 deg. to 110 deg. The emulsion should be then heated in a water bath till it shows green by transmitted light. The temperature of an emulsion should never exceed 120 deg. F. The emulsions should be broken up and washed with water or precipitated with spirit. The emulsion should be remelted at a temperature not above 110 deg. F., and about 5 per cent. of methylated spirit should be added with from one-eighth to one-fourth of a grain of chrome alum to every ounce, after which it should be filtered and coated. Mr. Sebastian Davis suggested at the same meeting the following formula :—

No. 1.

Water	750 gr. vol.
Hydrochloric acid (1 to 4)	75 „ „
Potassium bromide	250 „
Iodide	12½ „
Ammonium chloride	50 „

When dissolved, make up to 1,000 grain volumes.

No. 2.

Silver nitrate	375 gr.
Water	850 gr. vol.

The chloride was advantageous, as giving brightness, and to a slight extent density.—*Photographic Journal*, May, p. 223.

Backing for Plates.

Dementjeff recommends the following method of backing plates. A sheet of glass of fairly large size is cleaned and talced, and the talc wiped off the edges to the width of about quarter of an inch. Coat the plate with 2 per cent. of raw collodion with a few drops of castor oil; when the collodion has dried, the plate should be placed on a levelling stand and coated with a 10 per cent. gelatine solution to which a little glycerine has been added, dried, and then coated with coloured gelatine, which is prepared as follows :—12 parts of gelatine are allowed to swell in 90 parts of water, melted in a water bath, and 8 parts of sugar added, and 80 parts of glycerine. This is coloured with aurine, chrysoidine and methyl violet; and for a half-plate the following quantities may be used :—Sodium of gelatine solution, as above, 60 parts; saturated alcoholic solution of chrysoidine, 2 parts; ditto of aurine, 2 parts; and methyl violet, ½ part. The gelatine and collodion film, when thoroughly set, which will be in about two days, may be stripped, cut up in sizes, and used as backing, by merely squeegeeing into contact with the back of the plate with a roller squeegee; it can be easily stripped, leaves no stain behind, and may be frequently used.—*Photo. Wochenblatt*, June 13th, p. 202.

The Action of Developers and Water on Gelatine Dry Plates.

T. C. Porter recounts some experiments as to the action of water and developer on plates with the following results :—Plates soaked in water previous to developing develop more rapidly and give stronger images. A plate soaked in a mixed hydroquinone developer exposed and then developed showed more detail and developed more rapidly. Pyro and ammonia act prejudicially when thus applied.—*Brit. Journ. Phot.*, June 2nd, p. 341.

Potassium Bromide as Restrainer.

Eder summarises our information on the above as follows :—With ferrous oxalate developer bromide acts very powerfully, a few drops of 10 per cent. solution producing a marked difference; with large quantities considerable over-exposure may be compensated for. Pyro-soda stands next to ferrous oxalate as regards the effect of bromide. With pyro and ammonia, however, bromide acts rather as an anti-fog than as a restrainer, and for normal exposed plates 30 drops of 10 per cent. bromide must be added to every 100 c.cm. of developer, and for over-exposure from 5-10 c.cm. for every 100 c.cm. of developer. With ready-mixed hydroquinone-soda developer is less amenable to the action of bromide than pyro-soda, and although development may be slowed, over-exposure cannot be so well compensated for as with pyro or oxalate. With hydroquinone the best restrainer is old developer, the action of which is due to the oxidised developing agent, a similar action being noted with ferrous oxalate and pyro-soda. With eikonogen and Metol bromide acts as an anti-fog and restrainer, but in considerably less degree. Considerable over-exposure cannot be corrected with Metol and Amidol by means of bromide; the old and partially oxidised developer does not act as with ferrous oxalate or hydroquinone, as, although it slows development, density is not increased. An addition of bromide in small quantities, 1 in 1,000, of the Metol developer merely acts as an anti-fog and is for this reason recommended by the makers. Eder also points out that whilst the restraining action of bromide with all developers is admitted, yet its anti-fogging power and activity cannot be strictly formulated as the character of the emulsion plays an important part.—*Photo. Corresp.*, June, p. 281.

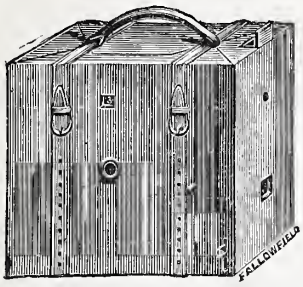
Lithia in the Hydroquinone Developer.

Lainer states that the following developer, which has been specially recommended for Eastman films, presents absolutely no advantages so far as the results go, and is considerably dearer than his rapid developer.

Water	1,000 parts.
Sodium sulphite	75 „
Hydroquinone	12 „
Ferrocyanide of potash	5 „
Lithia	3 „

Photo. Corresp., June, p. 287.

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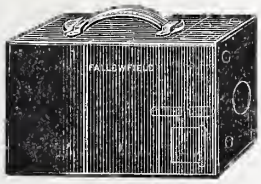
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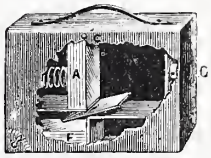
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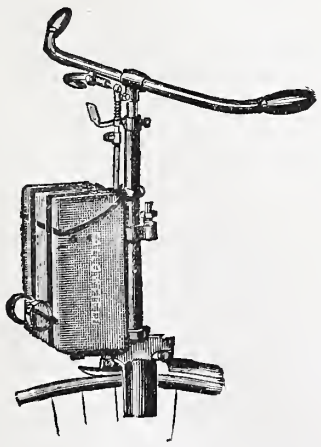
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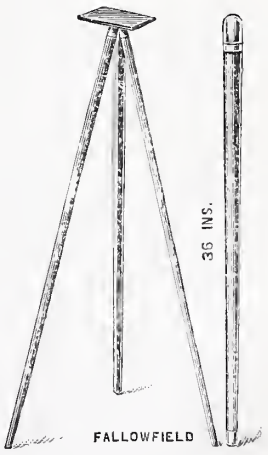


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Anhydrous Sodium Sulphite.

MM. A. Lumière and Seyewetz strongly recommend the above in preference to the ordinary recrystallised salt. The anhydrous sulphite is stable both in dry and liquid state, and one part is equal to two of the recrystallised salt.—*Paris Photo.*, June, p. 208.

Oxalate of Diamidophenol.

Messrs. A. and L. Lumière read a paper before the Societié Française, suggesting the use of the oxalate of diamidophenol as preferable to the chlorhydrate which is one of the commercial forms of Amidol, and the oxalate is formed by them by double decomposition of potassium oxalate and chlorhydrate of diamidophenol. Twenty parts of Amidol-Hauff dissolved in 200 parts of water and mixed with 19 parts of oxalate of potash dissolved in 200 parts of water gives a solution containing 21·5 parts of oxalate of diamidophenol. This salt is sparingly soluble in water 1 in 2,000, but far more soluble in sodium sulphite solution, and by means of this it is possible to get a concentrated solution. A 2 per cent. solution of sulphite will dissolve $1\frac{1}{2}$ per cent. of oxalate of diamidophenol, a 5 per cent. sulphite solution dissolves 3 per cent., a 10 per cent. sulphite $5\frac{1}{2}$ per cent., and a saturated solution 7 per cent.

Messrs. Lumière state that increase of the strength of the diamidophenol above 3 per cent. gives no increase of energy of the developer. A very few drops of 10 per cent. solution of ammonia accelerates very much without giving any fog, but that with larger quantities of ammonia a general black fog is produced. A few drops of 10 per cent. solution of acetic acid is the best restrainer, small traces of bromide having but little effect.

Finally they suggest the following formula for instantaneous work:—

Oxalate of diamidophenol	5 parts.
Anhydrous sodium sulphite	30 to 40 „
Distilled water	1,000 „

For time exposures reduce the quantity of sulphite to 10 to 20 parts.

The advantages of the oxalate salt are that both in the solid and liquid state it is more stable; considerably less sulphite is required, which, from an economical point of view, is not to be despised; and finally, it will not stain the skin.—*Bull. Soc. Franç.*, June, p. 293.

Tinfoil as a Support for Photo-litho Transfers.

Capt. Mantell described before the P.S.G.B. the above, which, however, will not allow of useful condensation.—*Photographic Journal*, May, p. 215.

Contretypes or Positives Direct in the Camera.

This subject has been claiming considerable attention of late, and Signor Corsi gives a description of his method which may be useful. The plate is exposed in the camera and developed as usual, care being exercised, however, that it is not fogged. It should be then well washed till quite free from the developer. The following solutions are required:—

A.

Saturated solution of chrome alum.

B.

Boric acid...	1·5 parts.
Water	500 „

C.

Solution A...	20 „
„ B...	10 „
Water	1000 „

D.

Potassium bichromate	25 „
Nitric acid...	10 „
Solution A...	25 „
Water	1000 „

E.

Potassium hydrate	2 „
„ bromide	2 „
Water	1000 „

Place the developed and well-washed negative in solution D till the black image is quite converted into a red one; then wash well in three successive baths of solution C and soak in solution E till the red image disappears, and thoroughly wash. Expose the plate to diffused light for about 30 sec., or to lamp or gaslight for about 5 to 10 min., and then develope with a well-restrained eikonogen or paramidophenol developer. The idea is not new, but may be useful.—*Bull. del Soc. fot. Ital.*, May, p. 101.

Positive Printing with Chromates.

R. E. Liesegang gives an account of his experiments to prepare a paper which could, like ordinary silver paper, be printed right out so that no actinometer should be needed, and gives the following results:—Chromates are less sensitive than the bichromates, caustic and carbonate alkalies, and feebly alkaline salts, such as acetate and phosphate of soda, prevent the decomposition. Acids are also prejudicial, formic acid less so than the others. Sulphocyanide of ammonium makes the paper insensitive. Sodium tungstate, sodium oxalate, and potassium chlorate reduce sensitiveness, but gives a good white ground. Potash alum has no effect on sensitiveness, but the ground is not white. Zinc chloride and sodium sulphite reduce the bichromate, even in the dark, to chromate of chromium oxide; sodium bisulphite acts like a weak acid; ammonium vanadiate and borax have no action. The peach red chromium chloride Cr_2Cl_6 is bleached by light, and thus gives a negative image. Ammonium bichromate and sodium chloride is of the same sensitiveness as the pure bichromate; sodium fluoride lowers the sensitiveness somewhat. The conversion of the dark-brown chromous sulphate by light into green chromic sulphate takes place only after an hour's exposure. The yellow lead salt is stable to light. The copper salt, as well as a mixture of ferric chloride and ammonium bichromate is useless, as the unexposed portions turn dark brown. Bichromate of ammonia and chloride of gold spread one after the other on gelatine paper give an intense black image, but the gold is also reduced in the unexposed parts to some extent. A slight increase of sensitiveness was noted when the chromated paper was coated with an oil or an alcoholic solution of resin.—*Photo. Archiv.*, June 1st, p. 162.

Another Developer for Gelatino-Chloride Paper.

Hanneke suggests the following:—

Sodium sulphite	50 parts.
Citric acid	8 „
Paramidophenol hydrochlorate	7 „
Distilled water	1,000 „

Dissolve in the above order. Expose the paper till the image is faintly visible; soak in water till limp; then develope in above till all the details are visible in a red colour; then place in 5 per cent. salt solution, wash well, and tone and fix.—*Photo. Mittheil*, June 1st, p. 67.

A Simple Toning and Fixing Bath.

Valenta states that the toning and fixing cartridges contain nitrate of lead, hypo, and chloride of gold, and they possess the advantage of simplicity and good results. From numerous experiments he suggests the following:—

Nitrate of lead	10 parts.
Hyposulphite of soda	200 „
Distilled water	1,000 „

Dissolve and before using add—

Sol. chloride of gold 1 : 100	50 „

The bath may be used at once, but it is as well to place one or two useless prints in it to saturate it with chloride of silver. As soon as the prints begin to show two colours a fresh one should be used. The advantages of simplicity, cheapness, and excellent tones recommend this in preference to the ordinary formulæ.—*Photo. Corresp.*, June, p. 288.

The Influence of Temperature and Dilution of the Developer on the Colour of Platinotypes.

Lainer summarises his experiments on this subject as follows:—Willis' cold platinotype paper prints generally have a tinge of bluish-grey. Pizzighelli and Hübl's paper prepared with gelatine usually gives brown to black tones; paper prepared with arrowroot always gives brownish tones. Willis' cold paper can be toned to brownish violet in a uranium bath, which is not the case with Pizzighelli and Hübl's paper. The higher the temperature of the developer, the browner the tone; the colder the developer, the blacker the image is and the purer the whites. An increase of oxalate in the developer has not much influence on the tone; dilution of the developer to one-half tends to sepia tones, which is particularly noticeable in the shadows. The following is the procedure recommended for black tones:—Dissolve 300 parts of oxalate of potash and 10 parts of oxalic acid in 1,000 parts of water. For use, heat part of the solution to 50 deg. C. With cold development at 20 deg. C. the shadows are not always deep enough, and the concentrated developer is recommended, whilst diluting the developer gives some control. Old developers should be preserved and boiled with quarter of their volume of concentrated sulphate of iron solution to recover the platinum.—*Photo. Corresp.*, June, p. 286.

Uranium Toning of Platinotypes.

Stieglitz gives the following directions on this subject:—Print slightly deeper than usual, add to each ounce of developer a few drops of sat. sol. mercury bichloride; be very careful to eliminate all iron, well wash, and tone in—

Uranium nitrate	4 parts.
Potassium ferridcyanide	1 part.
Water	400 parts.
Glacial acetic acid	30 ,,

Then wash for a few minutes and dry.—*American Amateur Photographer*, May, p. 210.

A New Stripping Medium.

R. E. Liesegang states that a solution of sodium fluoride will strip the film from a negative quite as well as hydrofluoric acid, and obviously presents many advantages over the acid.—*Photo. Archiv.*, June 1, p 167.

Practical Hints on Obtaining Pictures—IV.

A LITTLE HERESY IN THE MATTER OF CLOUDS.

By A. Horsley-Hinton.

In the course of three or four chapters on pictorial photography, especially landscape and out-of-door subjects, it is hardly possible to proceed far without giving consideration to that part of the picture which is above the horizon or sky line.

The subject of clouds in landscape has so often of late years occupied these and contemporary pages that one might have thought that not only was the subject already exhausted, but that all that was worth knowing had already been made familiar to each and every photographer.

With this subject, however, it would seem to be as with so many others—a great deal is said and written, and those for whom these voluminous teachings are intended grasp a very little of it, and even misconstrue that little; and, thoughtlessly believing they know all about it, go on their way but little benefited, and even committing worse errors: for surely the error which is accompanied with some little evidence of knowledge is worse than the innocent display of absolute ignorance.

Judging from the average photography of to-day, the subject of clouds as a pictorial factor is underestimated; the importance, the magnitude, the inexhaustibility of the subject is not appreciated or understood. Clouds are only clouds, and if they "fit" the picture and prevent one-half of the picture remaining a white blank, that is all that can possibly be desired. This seems to be the prevailing idea

Thanks to reiterated teachings, competition, and the criticisms of experts, the arrangement, selection, or composition of the subject of the picture receives careful forethought, preconsideration, and even prolonged experiment: but how few ever think it necessary to spend just as much judgment, just as much care in selection, watchfulness, and study on the clouds which we ultimately propose to wed to some given landscape?

The very teachers and critics who set us right when our pictures lack "balance" or "harmony," or in some way are supposed to infringe the so-called canons of art, can direct us, as regards the sky half of the subject, only in the crudest and most indefinite manner. With most the ideal appears to be to secure the clouds on the same negative as the landscape, or, failing this, the panacea for all evils is thought to exist in exposing a second plate and so obtaining the same clouds as were actually present when the scene itself was secured.

How utterly either of the methods fail to adequately meet the difficulty must have been felt by almost every experienced photographer of genuinely artistic instinct who has attempted to apply them in practice. On photographing a scene it is not sufficient to merely make sure of having on the same or a separate plate the clouds which were present at the time; and however heretical such an opinion may sound, I will endeavour, in as simple a manner as possible, to show how this is.

It is with clouds as with most things in nature—they improve on acquaintance; that is to say, it is only after long and careful study and observation that we find how much there is in them that we previously had not noticed, and how much there is to be learned.

That the nature of cloud-forms, their beauties and leading features, are so little known is not to be wondered at when we think how few people devote even a passing thought to the subject. This is so amongst photographers, and if true of the picture-makers, how much more so amongst those who constitute the audience or spectators! In common conversation remarks upon weather, upon the forward state of vegetation, or the prettiness of the country are frequent enough, but beyond a reference to some phenomenally brilliant sunset when do we ever hear any reference to the beauty of the clouds which filled the field of view at morning, and who can tell you whether yesterday the form of the midday clouds was light and fleecy or grand and impressive? Think for a moment of the ever-changing scene overhead, the ceaseless panorama of brilliant contrasts, rich colouring, and subtle harmonies, and is it not appalling that in an age when the resources of Nature and Art are so heavily drawn upon to gratify the senses of a cultivated public, so much beauty, so large a source of æsthetic pleasure seems as it were wasted day by day?

But it is for us to consider how this inattention may affect us. There is, perhaps, nothing with which the eye is more thoroughly familiar than the human face, and from complete knowledge follows the immediate recognition of an error in its portrayal. A face drawn with ever so slight a fault, either in contour or relative proportion of the features, is by the least intelligent recognised at once as inaccurate to nature. If a tree be drawn eggregiously at fault, it may be seen to be wrong and condemned; a lesser blunder will pass unobserved, or at most it will only be felt that *something* is wrong, though what and in which respect our average spectator will be unable to say.

As a general rule, then, perfect knowledge will secure condemnation of the smallest error; and so in proportion as there is ignorance on the part of the producer or spectator, faults

and failings will escape notice, and it may be for this very reason that the clouds in photographic pictures continue, as a general rule, to be so far from perfection—the public pass them by and demand nothing better—so few among critics are able to find just fault, and so the average photographic worker, resting too much upon the opinions which others express with regard to his work, and lacking thoroughness and independence, goes on repeating mistakes, and with perfect contentment fails to advance.

But it may be asked, How can all this error exist when the camera, without training, possesses the power of correct portrayal, and might thus be supposed to save the operator the necessity of so much knowledge and study? That the camera does thus reproduce accurately only assists the photographer as regards the actual "form" and shape of the clouds; the whole matter of "tone," that is, of the depth to which the clouds are to be printed—in other words, the lightness and darkness of clouds and sky in relation to the rest of the scene. The whole of this rests entirely with the photographer, and whether he represents them correctly in this respect depends entirely on his knowledge of how they *are in nature* and how they *ought to be in his picture*, so as to give the same impression as in the nature original. This—so all-important as it is—the processes of photography may not be trusted to do correctly. So much, then, for the present, for the necessity of knowledge and the manner in which it shows itself.

Now as regards a certain heresy to which I have committed myself above—namely, that it is not all-sufficient merely to give the particular clouds with a scene which were present at the time.

Lest there should be any misunderstanding it will be well for me to say I am speaking of photographs as *pictures*, not as *photographs* only; that is to say, photographic methods employed for pictorial purposes or as a means of artistic expression, and not as used to exemplify the wonderful powers and mechanical perfections of instruments and processes. Then notice that in recommending that the clouds be obtained on the same negative as the scene, or that a second plate be exposed immediately after, the principle and intention is in both cases the same, and is before anything else to procure an exact and accurate representation of the particular phase of Nature before the camera. The prevailing idea is to make an accurate record, and to trust to the simple avoidance of untruthfulness to escape blame, and perchance to excite admiration.

In the concluding paragraph of the preceding chapter of my present series of articles (p. 417, June 23rd), a maxim of a very master in art was quoted to the effect that artistically Nature is by no means always right, but that "the condition of things that shall bring about the perfection of harmony worthy of a picture are rare," and if we accept this, as with a little thought we are almost bound to do, then the supreme advantages of mere accuracy disappear.

I think, too, it will not be difficult to suggest how in practice this is borne out. How often have we made the remark upon a picture, "Clouds not quite suitable," or something to that effect, and we have been met with the retort that the clouds are on the same negative, or that the clouds were taken at the same time—arguments, both with regard to the truthfulness of tone, and especially as regards pictorial efficiency, quite, to my way of thinking, worthless.

The clouds, both in respect to form and density, are to be equally considered as part of the composition and harmonious arrangement, as the trees and cottages, the hedges and river and rushes, and we shall often wait long, and, finally, miss an opportunity, if we wait for the clouds to shape themselves as we want them.

Yet another method is taught by those whose very teachings betray a too superficial knowledge of nature, but who, nevertheless, think to succeed by prescribed rules and formulæ to accuracy in physical phenomena.

It is popularly taught that if the lighting of the clouds be the same as the landscape, there is nothing else to be wished, and hence it is recommended that cloud negatives be made, and direction and time of day be carefully noted thereon, and any landscape scene can be safely used with any cloud negative in which the record from compass and clock agree.

A wider knowledge of Nature will teach us that, in cloudy weather for instance, the greatest illumination comes from a part of the sky quite opposite from where the sun lies hidden and obscured; and, again, the sky itself often suggests what we might almost call false lighting, which in a picture would reasonably enough call forth condemnation.

From the foregoing I may summarise thus:

(1.) Clouds on the same negative are rarely desirable—first, because, even if admitting that mere truthfulness to Nature is a *sine qua non*, their presence on the same plate gives no assurance that they will print in correct tonal relation to the scene; secondly, because, even by the most approved methods, they are represented on the plate in only an approximately correct density; thirdly, clouds will rarely be found so arranged as to keep the composition of the entire picture; and if a scene be only photographed when sky and clouds, in addition to everything else, is all suitably arranged, we are placing upon the photographer an additional and unnecessary limitation.

(2.) The proposal to expose a second plate for the clouds only will not be always satisfactory, for the "third" reason given above.

(3.) The simple fact of a cloud negative and a landscape negative having been taken from the same point of the compass and at the same hour and date will, apart from the question of bright days and cloudy days, and consequent difference in the amount of illumination, be no guarantee of satisfactory pictorial effect, the success of a picture depending as it does upon other matters than mere physical accuracy.

I am of course well aware that there are exceptional occasions when the clouds in the scene before us leave nothing to be desired—when perchance the long grey bars of purple cloud athwart a saffron background repeat the simple lines of the horizon in a way which is almost rhythmical; and higher up, when the air is clearer, garlands of crimson and gold festoon a sky of pearly grey. Very gorgeous but never gay are these tributes to the declining day, until the clouds grow big in the feebler light, and cover like a pall the last gleam of the sun's glittering wake.

But to return to our discussion. I am not willing to forget that oftentimes the present clouds will be the best, and I would have my readers ever on the alert for such fortunate occasions, but never forgetful that the clouds on the same negative may not be, usually will not be, the clouds we want.

Thus far I have written in declamatory terms of some prescribed methods, but in attempting to cut away should also attempt to erect something in their place. To lay down a rule would be to commit the very error which I have condemned; there can be no rule where the result depends on artistic feeling, and perceptions and knowledge of the effects aimed at. Not only for the sake of accumulating a great number of cloud negatives, but also because it means frequently looking at them, I would strongly urge that a great many exposures be made for clouds only, and, having obtained them, combine them with your landscape scenes in such a manner as your taste and knowledge of nature may justify, remembering that the purpose of your picture is to give to the intelligent spectator an impression pleasing and satisfying as the impression of the natural view might have been, and for this purpose it may even be legitimate to exaggerate contrasts and effects; but of this anon.

I had purposed pointing out and illustrating in what manner cloud effects may assist, or be wholly destructive to, the motive and sentiment of a picture, and I might thus further show the fallacy of supposing that the clouds present in a scene are

usually those most to be desired; but of this and the question of to what extent a deliberate divergence from truth for pictorial motives may be justifiable I will reserve for a future chapter.

(To be continued.)

The Elements of Photo-micrography.

By "Mikron."

(Continued from page 437.)

In place of the ordinary lime-cylinders Dr. E. Roux, of Berlin, recommends a magnesia oxy-hydrogen light, which the writer hopes to test at an early date. The magnesia cylinders are prepared in the following manner:—Common powdered magnesia is made into a stiff paste with a little water, and then forced into a tube of 4 to 5 mm. (say ·16 to ·2 in.) internal diameter. It is then squeezed out and cut up into pieces 5 mm. long. These pieces are rolled into balls and stuck on the end of platinum wires. They are then exposed for three or four hours to a temperature of 100 deg. C., and afterwards they are first exposed to the hydrogen flame of the oxy-hydrogen burner, and then to the oxygen burner. By this treatment they are rendered hard and unalterable in the air. One of these small pieces is said to last for fifteen hours straight off. It gives an exceedingly effective light for photographic purposes, it illuminates regularly, is not diffusive, and has the further advantage of remaining fixed to the same point.

Ordinary gas light is too unsteady, and, as a rule, neither brilliant enough nor sufficiently actinic for photographic work of this class. But by the use of a good incandescent gas lighting system, such as the Welshach light, a beautifully brilliant and steady light of sixty candle power may be obtained for an outlay of a little over ten shillings. In this system the light is produced by the incandescence of refractory materials such as zirconium, lanthanum, thorium, yttrium and erbium oxides, etc., formed as a hood or mantle to fit over the gas burner. By altering the composition of the mixed earths forming the mantle, light of various colours may be obtained, such as an intense white, golden yellow, or greenish colour. Lastly the much despised paraffin lamp may be used, and much good work obtained by its aid. It must, however, be a good lamp of either single, duplex, or triplex construction. But if either of the last two forms are used it is necessary to employ a plano-convex lens to bring the rays parallel.

A much whiter and more actinic light is obtained from the paraffin lamp if a little camphor be dissolved in the oil. A piece about the size of a Spanish nut added to a pint of oil will improve it considerably.

The lamp should have a metal chimney provided with an opening at one side, into which a piece of plain or blue-tinted glass may be fixed. A paraffin light, arranged as described, will be found to work very satisfactorily with amplifications up to about 500 diameters.

Occasionally the diaphragm does not sufficiently diminish the intensity of the illumination when very transparent objects are being photographed. In such cases it is a good plan to place a piece of blue glass or a disc of ground-glass between the diaphragm and the source of light.

A similar arrangement for diffusing the light may often be required when objectives of low power are being employed and the field is irregularly illuminated. A disc of ground or varnished glass or a thin piece of opal having an even surface will usually be sufficient to modify the light.

If the microscope is to be used for a fair length of time at each operation, it is a good plan to pass the light through a solution of alum contained in a thin glass bath so as to absorb the heat rays.

The alum bath has the disadvantage of greatly increasing the exposure required. Much heat may, however, be stopped without using an alum bath by fixing a screen of stout cardboard or asbestos between the light and the substage condenser. It will, of course, be understood that a suitable opening must be provided for the passage of the light to the microscope.

As a rule beginners pay too little regard to the modifications of light and the increased definition which may be obtained by a proper use of the substage condenser. Some completely overpower their preparations by flooding them with too much light, whilst others render them quite indistinct by reducing the illumination too much. If the cone of light be too greatly reduced, it is very probable that diffraction fringes will be produced, whereas if it is not small enough a "fuzziness" or hazy appearance may result.

Strictly speaking, an objective ought to allow the use of a cone of light having a numerical aperture as large as its own. But, in practice, this feature is not attained, and, generally speaking, the best result will be obtained by the use of a cone of light of about two thirds this value.

Dark-ground illumination is, of course, effected by means of special appliances, one of which is known as a spot lens. It is merely a plano-convex lens having a circular black spot marked on its upper plane surface so as to cut off the central rays of light. A more perfect instrument for dark-ground illumination is the paraboloid; but as it requires a large mirror for its effectual use, it is frequently placed out of consideration altogether. It has, however, the advantage of giving rays of much greater obliquity than the spot lens.

It is very important from the photo-micrographist's point of view, that all the qualities of his sensitive plates should be thoroughly known and understood.

The writer is aware that this statement may appear very commonplace, but it is, nevertheless, quite true that a great many operators confine themselves to a single maker's plates of one particular quality, and when they succeed in obtaining a good picture they praise the plate, yet when they get a bad result they condemn the prepared object, whereas the fault may be due more to the class of plate used than to the nature of the preparation.

This different makers' plates differ in certain respects is well known, and the sensitiveness of each brand is also well known, but the value of the contrast and range of tone given by them is a matter which, unfortunately, is frequently, overlooked.

Suppose we desire to photograph an object having a pretty even colour and lacking contrast, and we use a plate giving little contrast and a long range of half-tone, it will practically be impossible to obtain a presentable negative; whereas if a plate having opposite qualities had been employed a good negative would, in all probability, have been secured. For the same reason it will be seen that if the preparation has very strong contrasts, and we take a plate which also gives strong contrasts and a short range of half-tone, the resulting negative would be characterised by the loss of all detail, and, consequently would be absolutely useless for its specific purpose.

The photo-micrographist must be prepared to meet many difficulties and disappointments, as his objects will vary considerably in transparency, colour, and range of contrast, etc. Therefore the operator who avails himself of the use of plates of different and known qualities, and exercises a skilful discretion in their use, will make much better progress than one who sticks to his favourite brand and employs it for all purposes.

(To be continued.)

East London—At the general meeting held on 27th ult., Mr. Uffendell was voted to the chair. A question from the question box was read, "Wanted, a good formula for a Borax Bath." The Chairman recommended 1 oz. of borax to 80 ozs. of water for stock; for use, take 10 ozs. of stock and 1 grain of gold. Mr. E. M. Minns then read his paper upon "Subjects, and how to find them." During the course of this most interesting paper the lecturer strongly advocated the use of a view-meter, and showed one of his own construction; he also advised the use of blue spectacles, so as to do away with the colouring effects in the view, and only to perceive the relative values of the high lights and shades. He further said that the "subject" was only of secondary consideration; the manner in which it was portrayed was everything. A discussion followed, and was taken part in by Messrs. Bennett, Copping, Read, Stowe, and Gould. Members' work was shown by Messrs. Bennett, Copping, and Aldridge.

New Formulæ for Silver Bromide Paper with Metol-Hauff.—For bromide paper the normal Metol-Developer requires much less exposure than ferrous oxalate. The best plan is to use the Metol potash carbonate developer in concentrated form. The developer should be kept up to strength and exposure made to suit that strength so as to obtain results which cannot be distinguished from results by ferrous oxalate. A little bromide solution (1 in 10) say ½ to 1 gr. per oz. of developer should be used, which allows more latitude of exposure than ferrous oxalate. If these instructions be carried out, the best tones will be obtained. If the developer as a whole is much diluted, or if the alkali is much reduced in proportion, or if too much bromide be added, the tones will be more grey and less black than is usually desired. When soft grey prints are required, as for aftertoning or intensification, the plan is to dilute the developer. The process of development is speedy, and there will never result any discoloration of any kind, even if the prints are kept long in the developer, as when a large quantity of bromide has been added. The gain of time in exposure and development for enlarging is considerable, and will commend itself to all who enlarge on this paper. No clearing bath is needed; the prints are extremely amenable to the processes of toning after fixing.

MONTHLY PRINT COMPETITION.

NO. 49.—FIGURE STUDY.

CLASS I.

HANKINS, G. (London).—"The Love-Letter." Crouch R.R., *f*/22; 8 secs., June, bright light, 5 p.m.; Iso. medium; platinum cold bath.

BOWLES, MRS. FLORENCE (London).—"The Old Fisherman Mending his Net." Swift's Paragon; 1½ sec., April, good light, 3 p.m.; Marion platinotype.

SHEARER, W. S. (Rutherglen).—"Forsaken," Taylor. Taylor, and Hobson, *f*/11; 2 sec., April, dull light, 3 p.m.; Ilford P.O.P.

ARCHER, C. F. (London).—"When the Heart is Young." Hockin, *f*/8; 7 to 8 sec., June, bright, 3 p.m.; Paget xxxxx, platinotype; cold bath. Rather too flat.

ORR, F. HARMAN (Kingstown).—"I See You." Dallmeyer's F. B. patent portrait, about *f*/4; 1-10th of a sec., February, sunshine, out-of-doors, 1 o'clock; Edwards iso. instantaneous, solio, matt-surface. Spoilt by the flower, otherwise a beautifully soft print.

EYRE, H. S. W. (Sussex).—"Footsteps in the Gloaming." Landscape, *f*/20; 2 sec., April, sunshine; Ilford, No. 18; solio, borax and gold. A good idea, but too many straight tree trunks.

PEDDIE, A. (Sunderland).—"Afternoon Gossip." Taylor, Taylor, and Hobson; 10 sec., May, fair, 12.45; Ilford ordinary; platinotype paper. Very good placed fifth.

NICHOLLS, A. C. (Cheltenham).—"The Vagabond." Zeiss' 15 in. series IV., *f*/18; 5 sec., May, bright declining sun, but taken in the shadow of a house, 6 o'clock; Fitch's film; P.O.P. Good; bracketed fourth.

HOLLAMBY, H. (Northumberland).—"Tandem." Lancaster's Instanto, *f*/13; 2 sec., June, very bright, 4 p.m.; Cadett Lightning; Ilford P.O.P. Very good technical work.

EDWARDS, GUS. (Hereford).—"Stickleback Fishers." French single, *f*/11; cap on and off, March, sunshine (under the shade of bank), 5.10 p.m.; Ilford iso.; med.; P.O.P. In the first twelve.



No. 1.] "The Love Letter." [Geo Hanlins.
SILVER MEDAL.

WILLIAMS, G. S. (Kent).—"On the Stile." Lancaster's landscape, *f*/30; 2 sec., May, bright sunlight, about 12.30 noon; Edwards' iso. inst.; platinotype; cold bath. Could be much improved by trimming down considerably.

TIMS, J. (Ewell).—"There, that's where it's wrong!" Optimus euryscope, *f*/16; 1 sec., June, moderately bright, dark cloud shutting out the sun, 7 p.m.; Paget, hot bath; platinotype. In first twelve.

ROBERTS, R. E. (Liverpool).—"We are Seven." Atkinson's R. R., *f*/16; about 3 sec, June, good light, 6.15; Ilford; platinotype. Print too black, and white wants trimming down.

POLLARD, SEPTIMUS (South Shields).—"Oh! what will Father say!" Euryscope (Optimus), *f*/11; 2 sec., November, changeable, 12 o'clock; Ilford ordinary; Eastman bromide paper B. Taken between showers. A little longer exposure to print would have given a softer result. The idea is well carried out.

CURLE, CHRISTIAN H. (Melrose).—"The Winning Rink."—Dallmeyer's R.R, 25, barely a second, December, bright sun shining through trees, about mid-day; Paget's xxxxx; Ilford P.O.P. Overtoned, and a little too much of the straight line composition of figures.

HIELD, J. H. (London).—"Mischief Brewing." Wray's 5 n., 1-16th; April, full sunlight, 11 a.m.; Ilford red label; Ilford P.O.P. Taken in Newman and Guardia's hand-camera held in the hand. Capital; placed fourth by judges.

EDMONDSON, W. B. (Oldham).—"His First Sweetheart." Optimus, R.R., *f*/16; 1 3-8th sec., June, sun obscured, 4 p.m.; Ilford slow cold-bath platinotype. Commended by judges.

SMITH, C. (Rutherglen.)—"Awfu' Comic." R R., *f*/11; cap off and on, March, bright, 3 p.m.; Imperial ordinary; Solio. Overprinted; commended.

CURRIE, J. E. (London).—"A Deal Fisherman." View lens, 6 in. focus, *f*/24; 1½ sec., Aug., dull, 3.45 p.m.; Ilford ordinary; slow rough bromide. Very good study.

MONCREAFF, A. A. (Portsmouth).—"Amongst the Corn." Optimus, R.R., *f*/16; ½ sec., July, sun, 3.15 p.m.; Thomas' ex. rapid; Ilford P.O.P. Nice and soft, and commended.

DAVIS, I. S. C. (India).—"In an Indian Garden." Shew's half-plate Eclipse, *f*/10; ⅓ sec., Feb., sun, 10 a.m.; Lumiere; ferrous-oxalate development; platinotype. Highly commended.

NEWPORT, Mrs. L. W. (Bewdley).—"A Portrait." Ross' R.S., *f*/32; 3 sec., June, strong, diffused; Ilford ordinary; hot-bath platinum. A capital portrait, but the surroundings are not good.

MARSTON, A. R. (Birmingham).—"Two Christ's Hospital Boys." Instanto; 1½ sec., April, good, 5 p.m.; Ilford ordinary; Ilford P.O.P. Good, but why not have used an iso. plate and got the colour of stockings properly rendered?

CLARKE, WILLIAM (London).—"A Short Rest." Beck, R.R., *f*/16; 4 sec., May, good, 7.30; Ilford ordinary; Eastman's Solio. The straight line of the pillar is not pleasing, and the print could have been trimmed with advantage; in the first twelve.

FOSTER, MISS I. (Chislehurst).—"A Happy Family." Beck's autograph rectilinear, *f*/16; 1 sec., July, in the shade, 2.30; Mawson's Castle; Dr. Jacoby's chloride of silver emulsion; paper. High lights; a little too white, but decidedly good.

POST, W. B. (New York City).—"Portrait of a Lady." Beck, *f*/16; 3 sec., during July, sunlight, morning; Cramer; platinotype. Very soft, but the tree trunk on the right not pleasing.

WOOD, A. HARRISON (Darlington).—"Portrait of a Lady." Optimus, R.R., *f*/12; 10 sec., June, diffused; Castle plate; Eastman's Solio. Soft and delicate, but the arm is a little too angular.

HARMAN, W. E. (London).—"Feeding Time." Stereoscopic Company's R. R., *f*/16; ⅓ sec., March, bright sunlight, 3 p.m.; Ilford ordinary; platitnotype cold bath. A little too flat and grey, otherwise good.

KELTON, FRANK (Lancaster).—"Well Guarded." Lancaster's Instanto, *f*/11; 2 sec., May, fair; Castle, Ilford P.O.P. Overprinted, and the wire and post obtrusive, but an excellent study.

SMITH, H. S. (Bradford).—"The Idler." Beck's R.R., *f*/22; 4 sec, Whitsuntide, good diffused light; Paget xxxxx; rough paper;

platinotype. Technically a very good print, but we cannot say much for the composition ; the straight lines are too much.

Davidson, W. N. L. (London).—"Art Students at Work," Shew's Eclipse R.R., *f*/15; medium shutter; May, good light, about 12.30 p.m.; Cadett's lightning; mezzotype. A capital study, and recommended by judges.

Angear, W. E. (South Devon).—"Day Dreams." Single, *f*/22; 2sec., May, very good light; Ilford ordinary; mezzotype. Far too patchy; whites without detail.

Williams, J. N. (Westmorden).—"Queenie." Wray's 5 by 6 Instantaneous; December, soft sunlight; Ilford extra rapid; old salted paper. Wants something to balance the leaning of figure.

Duncan, A H. (Glasgow).—"The Old Gamekeeper." Taylor, *f*/11; ½ sec., June, diffused llght; Ilford ordinary; P.O.P. Very pleasing and soft little study.

Pickel, R. H. (Bexley).—"A Pause in the Game." Thomas's half-plate E.R.; Dallmeyer's whole-plate lens, *f*/32; 3 sec., May; platinotype paper; cold bath. Prints want trimming, but good technically.

Roberts, D. O. (London).—In Maiden Meditation: Fancy Free." Swift's Rapid Paragon, *f*/22; 8 sec., May, good light; Imperial ordinary; cold bath platinum. Far too flat and weak, but a good portrait.

Erskine, G. W. (Melrose). —"Figure Study." Lancaster's single Inst., *f*/11; 1 sec., May, good light, in the shade; Ilford slow; cold bath platinotype. The figure wants balancing.

Redmayne, F. (Gateshead).—"In Dreamland." Taylor, Taylor and Hobson's R.R., *f*/8; about 1-8th sec.; Thornton-Pickard shutter; April, moderately bright, Imperial extra rapid; platinotype. A very good study, exquisitely soft.

Boyd, David (Ayrshire).—"Discussing the Eight-Hours Movement." R.R. Orthopanactinic, *f*/32; 1½ sec., April, diffused light, 4.30 p.m.; Ilford ordinary; ditto chloride. Over-toned, but good.

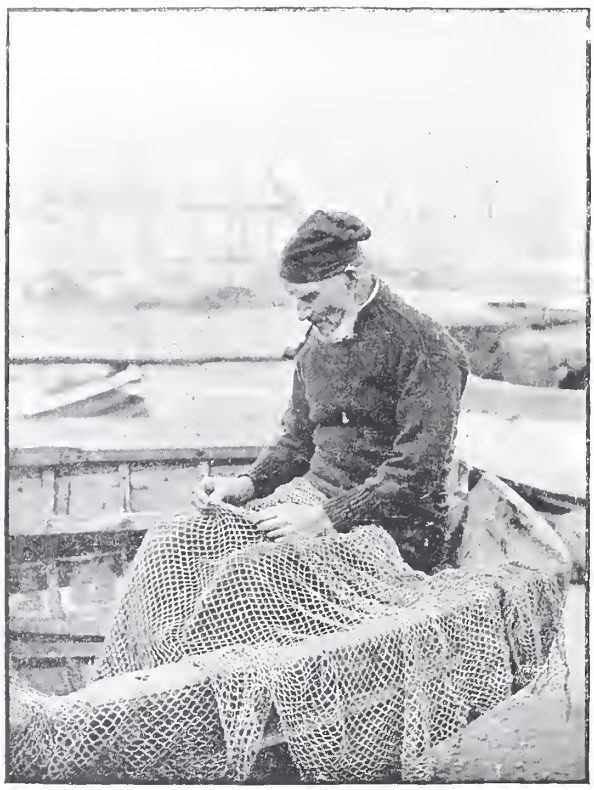
Forret, J. A. (Edinburgh).—"Nap." Lothian R.R., *f*/22; about 3 sec., June, 11 p.m.; magnesium; Thomas's extra rapid; platinotype. A little stiff in arrangement, but well commended.

Dunkeiley, V. (Burnley).—"Friends." Dallmeyer's 8½ by 6½ R.R.; open lens, 2½ sec., May, good light; Ilford ordinary, platinotype. Spoilt by the vignetting, and would have stood a little more printing.

Morgan, H. G. (Herefordshire). —"Hop Pickers." Wray's R.R., *f*/16; 2 min. to 3 min., October, good light, about noon; Paget's Phœnix; platinotype hot bath. Highly commended.

Woodhouse, C. H. (Hereford). —"Au Revoir." R.R., *f*/8; 1 sec., September, good light, 11.30 a.m.; Ilford rapid, Ilford P.O.P. Spoilt by over-printing, but a good idea well carried out.

Macdonald, A. C. (Sandhurst).—"Portrait." Instanto, 3½ sec., 7 p.m. A very soft and evenly lit portrait.



No. 2.] "The Old Fisherman mending his net." [*Mrs. Florence Bowles.*
(BRONZE MEDAL.)

CLASS II.

Dennis, P. H. (Switzerland).—"A Capital Joke." Lancaster's Inst., *f*/16; 1 sec., June, dull (in shade), 4 p.m.; Ilford rapid, Ilford P.O.P. Considerably over-toned.

Baker, G. E. (Hastings).—"A Portrait." Short focus lens, single, about 3 sec., May, diffused light, 5.30 p.m.; Ilford ordinary, P.O.P. Considerably over-toned.

Misselbrook, V. W. (Southsea).—"Cinderella." R.R., *f*/8; inst., June, magnesium, 7.30 p.m.; Thomas's extra rapid, Solio. A very good attempt, but the lighting far too harsh and brilliant for firelight. It might be considerably improved by bleaching the negative and redeveloping so as to get it more harmonious.

Macmillan, M. (Port Bannatyne).—"At the Stile." Vever's half-plate, *f*/11; 1 sec., April, good light, 3 p.m.; Thomas's E.R.; Ilford P.O.P. Too evidently posed, and the branches on right obtrusive.

Macfarlane, T. A. (Lanarkshire).—"Laziness." Underwood's (single), medium, 2 sec., May, indoors, diffused light, between 1 and 2 p.m.; Ilford ordinary, Ilford P.O.P. This hardly gives one the idea of the title, and the vignetting does not improve it.

Hunt, P. T. (Waterford).—"Coming from the Garden." R.R., *f*/11; 1 sec., May, dull and cloudy, 4.45 p.m.; Ilford ordinary. A little more toning would have improved this, and the pose is a little stiff.

Davis, G. (Jersey).—"Expectation." 7½ in. R.R., *f*/16; 2 sec., May, good light, 7 a.m.; Edwards' medium iso., P.O.P. Completely spoilt by over-printing and by the painting-in of the old man's hat.

Anderson, W. S. (Edinburgh).—"A Highland Lassie." R.R.A., *f*/8; half sec., November, diffused light, 2 p.m.; Ilford iso.; inst., Solio. Over toned and yellowed whites.

Paint, E. R. (Guernsey).—"Coming from the Well." Inst., *f*/12; 3 sec., March, subdued light, 3.30 p.m.; Ilford ordinary. A little too patchy, and could be trimmed down.

Gaine, R. L. (Sunderland).—"Please Do." R.R., *f*/16; 3 sec., March, electric arc, 9.30 p.m.; Castle; P.O.P. Lighting far too harsh, and plate under-exposed on left.

Hancox, R. T. (Surrey).—"Sweet Alice." Single landscape lens, *f*/16; 3 sec., September, light good, 4.30; Ilford special rapid; P.O.P. Spoilt by the background.

Thompson, Edith (St. Anne's-on-Sea).—"Portrait of a Lady." Lancaster's Rectigraph, *f*/10; 10 sec., June, bright, 12.30; Castle; P.O.P. Gives one the idea that the subject was kneeling down.

Purdon, P. G. (London).—"Just as I am." 7 by 5 R.R. Optimus, *f*/12; 3 sec., good light, June, 6.15 p.m.; Ilford rapid; Ilford. Over-toned and wants trimming down.

Whiting, Thomas (Beckenham).—"Good Old Tom." Rectilinear, *f*/8; 1 sec., July, sunshine with clouds, 12 o'clock; Edward's Iso. rapid; Solio paper. The perspective in this seems decidedly strained.

Kieffler, W. E. (Sunderland). —"Tiddledy Winks." Ross R.S., *f*/22; 11 sec., June, dull, about 3 or 4 p.m.; Castle, solio; combined toning and fixing. Far too patchy, and the background should have covered all over, not shown a bit of wall or something at side.

Fisher, R. (London). —"Granny." R.R., *f*/16; 2½ sec., May, fine, 4.15 p.m.; Ilford ordinary; P.O.P. A great deal too stiff in pose.

Edwards, H. (Birmingham).—"A Disciple of Walton." R.R. *f*/16; 1 sec., May, sun behind clouds, 4 p.m.; Imperial rapid; Ilford Alpha paper. Print developed with hydroquinone. Utterly spoilt by the hideous green tone.

Root, W. J. (London).—"Figure Study." Lancaster's Instanto, *f*/16; about 2 sec., May, bright, 3 o'clock; (Phœnix) Paget; P.O.P. A good portrait, but not artistic.

Bremner, B. G. L. (Ceylon).—"Early Tea in Ceylon." R.R., *f*/32; 4 sec, March, bright, diffused light, 7 a.m.; Ilford Special rapid; Solio paper. The whites are horribly yellow.

Brown, A. E. (London).—"Portrait of a Friend." Lancaster's Instanto, *f*/10; 3 sec., June, dull, 4 p.m.; Ilford ordinary; P.O.P. Slight movement visible, and it would have been better in the centre.

Bisset, J. (Aberdeenshire).—"A Young Critic." R.R., *f*/12; 1 sec., May, cloudy, bright light, 4 p.m.; Imperial ordinary; Solio paper. A good study, but not pleasing by any means.

Taylor, W. (London).—"At Rest." R.R., *f*/22; 2 sec., April, sunlight, 11 a.m.; Paget xxx; platinotype. Whites too harsh, underprinted, the post obtrusive,

Hunter, D. (Cork).—"Gooseberry Pickers." French R.R.; full aperture; 3 sec, May, moderately bright, about 4.30 p.m.; Ilford Ord.; Solio. Too much pose altogether, stiff and unnatural.

Walker, W. (Nottingham).—"Louie Byron, the Female Imper-

sonator." Medium, 2 sec.; subdued light, 3 p.m.; Ilford Ordinary, A good portrait, but nothing striking in it.

WALKER, H. V. (Settle).—"Caught in the Act." Chadwick's Hand camera; Wray's R.R. *f*/16; March, sunlight, 5 p.m,; Ilford Iso. plate; platinotype, cold bath process. A good study.

BROUGHTON, ELEANOR (Pembrokeshire).—"Fire." Ross R.R., *f*/8; Inst.; April, dull morning; Castle, cold bath platinotype. This represents a company of soldiers platoon-firing; and, whilst interesting, is not artistic. 1½ in. might be cut off right-hand with advantage.

HAMES, W. A. (Aberdeen).—"A Deer-stalking Scene." Taylor's D lens, *f*/32; 3 sec., April, bright, but no sunshine, 12 noon; Castle; Ilford P.O.P. The idea is good, but is it not a shot-gun?

COPEMAN, R. W. (Bradford).—"His First Pair." Becks' R.R., *f*/8, slow drop shutter, no band; June, in shadow of house, noon; Ilford Iso. Med.; Ilford P.O.P. Rather a good study, though not artistic.

NAYLOR, C. H. (Drighlington).—"Figure Study." Ross, *f*/16; 12 sec.; June, shadow, day, 4 p.m.; Ilford; Ilford P.O.P.; sulphocyanide am. Over-printed, and would stand a lot of trimming down.

ELLIOTT, N. (Coldstream).—"The Dusty Miller." Optimus 7 by 5, R.R., *f*/12; 2½ sec., October, bright, about mid-day; Ilford Inst. Iso.; Ilford P.O.P. The whole of the left side of print might be cut off without loss.

JENKINS, G. W. (Surrey).—"Walter." Burn, 7 by 5, R. Doublet, *f*/8; 4 sec., June, good light, no sun, 6.20 p.m.; Thomas' Extra Rapid; Ilford P.O.P. A good portrait.

GROOME, R. S. (Acton).—"A Top Sawyer." Taylor's R.R., 9 sec., *f*/8; Taylor's Rebound Shutter; September, sunshine, 11.45 a.m. Ilford Ordinary; Ilford P.O.P. Under-printed and over-toned.

WILLIAMS, M. (Lonsdale).—"Locked In." Wray, March, evening; Ilford do. There is absolutely nothing to carry out the title; this is a pity, because the expression on the child's face is excellent.

STEVENSON, W. (Surrey).—"Family Group." Whole-plate, Euryscope, 9 by 7; Perken, Son, and Rayment, *f*/11; May, bright sun, subjects in shade, 3.30 p.m.; Imperial Extreme Rapidity; cold platinotype. Not artistic, and the whites too harsh.

CLASS III.

BRIGHT, S. C. (Italy).—"My Charge." Extremely unpleasant in tone, the high lights blue, and the shadows brownish; gold bath probably too strong in gold.

COOKE, J. E. (Londonderry).—"Convalescent." Exceptionally harsh in lighting and over-printed.

STONE, C. S. (London).—"Figure Study." High lights too white and without detail.

CORRIGALL, P. (Newcastle-on-Tyne).—"Kinarastader." This is not pleasing.

TIMES, L. K. (London).—"A Juvenile Flirtation." Figures far too small; they are the least important things in the picture.

NIBLETT, Miss J. (Ledbury).—"Marjorie." Considerably over-printed.

HAWKER, G. W. (Birmingham).—"My Mother." Absolutely spoilt by over-toning and yellow whites.

PARKER, C. F. (London).—"In the Garden." Negative too harsh; there is no detail in the whites at all.

DAVIDSON, T. G. (Leith).—"A Day in the Country." Utterly spoilt by over-printing and over-toning.

HAND, C. R. (Liverpool).—"Waiting." Considerably over-printed and shows slight signs of unequal toning.

HALL, W. (Birmingham).—"This Pig went to Market." Spoilt by the background, and the child should have been looking at the "pig!"

HUTTON, ISOBEL (Lincoln).—"Sir Charles." Too flat; negative wants intensifying, or else too strong toning, and fixing baths have been used.

BRICKDALE, R. F. (London).—"Figure Study." Negative too harsh; absolutely without detail in the whites.

SHARLAND, Rev. G. F. (Huntingdon).—"Tell me a Story." Over-printed and not a pleasing pose.

MOREY, JOHN (Portsmouth).—"Tom." Rather too much top light, and the print is very spotty.

PEARCE, X. D. F. (Cambridge).—"Meditation." Absolutely spoilt by over-printing and over-toning.

BRASIER, ERNEST (Birmingham).—"A Figure Study." Spoilt by the over-crowding of accessories and the lines in the background.

GOSS, A. (Cheshire).—"Is that the Gaffer coming?" A good attempt, but the straight lines are offensive and the very clean boots are hardly in keeping.

MORRIS, O. R. (Anglesey).—"Ready for Playing." Too evidently posed.

HOOPER, H. A. (Gateshead).—"Gathering Flowers." The first idea of this picture is two or three white patches; negative far too harsh, and therefore whites devoid of detail

WATTS, W. (Sheffield).—"The Nurse's Charge." Over-printed, and spoilt, too, by the obtrusive branches.

TRANTER, W. J. (London).—"On Southend Beach." Over-toned and spoilt by the crowd of small boys.

MATTHEWS, F. J. M. (Chelmsford).—"A Pic-nic Group." Shows careful technical work, but not artistic.

TAYLOR, W. (St. Luke's).—"Portrait of my Friend." Over-printed, over-toned, and flat.

CURRY, R. (Yorks.).—"Come and see my Garden." Under-printed and over-toned.

GOODEYE, S. (Leytonstone).—"Awaiting his Return." A fearful example of square angularities, whites, yellow, and too much top light.



No. 3.] "Forsaken." [*W. R. Shearer.*
(CERTIFICATE.)

Messrs. Wormald and Co., late of Sutton, have now removed to more commodious premises at Rodney Road, New Malden, Surrey.

Mr. W. F. Slater, of 169, Southampton Street, Camberwell, S.E. has sent us a price list of cameras, lenses, and stands, which are reasonable in price.

We have received the sixtieth annual report of the Royal Cornwall Polytechnic Society, which contains a good deal of really interesting matter.

In our review of "Photography Annual" in our last issue we referred to the old "Tips for Tyros." These, however, are not the same as last year; we should have said some old "Tips." There is nothing new in them, except, perhaps, the peculiar style in which some of them are written.

A Hint *re* Pin-holes.—"I have had some considerable experience of this unpleasant subject, and having now found out a complete cure for pin-holes, which I formerly too often ascribed to the manufacturer, I venture to write to you to apologise for my injustice to you, and to explain how I go to work. I had, like many others, used a dusting brush, most carefully, as I thought, both before exposure and before development, but still the pin-holes appeared. Still unsatisfied, I investigated, and took one of the carefully (?) dusted plates into the light, and found on it many specks of dust, which adhered to the plate in spite of the brush having been passed over it. Seeing this, I cast about for a way of getting rid of this dust, and finally I adopted a strip of fine velvet, fitted on to a straight edge, and drew this carefully over the plate. This plan proved perfectly effective, and pin-holes are a thing of the past with me. Of course the velvet must be kept perfectly clean and dry. I can quite understand, on looking back, why the soft brush did not remove all the dust; nay, more, I can readily see that it might add to rather than remove the evil, by retaining a quantity of dust, and adding it to the plate rather than taking away from it. Besides, the brush is too soft to remove the dust which adheres to the plate, and only removes, even if clean, the loose particles."—*Photo. Scraps.*

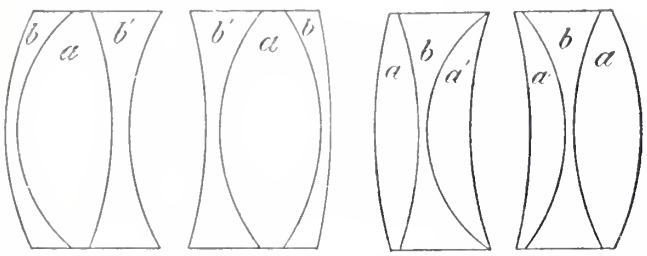
Goerz's Double Anastigmatic Lens.

DR. GOERZ, optician, of Berlin, recently described the above lens before a meeting of the P.S.G.B., and we make some extracts from the patent specification, which describes the lens very fully.

"Our invention relates to doublet lenses for photographic purposes, and is illustrated in the sectional views, figures 1, 2, and 3 of the accompanying drawing.

Within the last few years, as the result of the labours of the scientific glass laboratory in Jena, there have been made available for optical industries new kinds of glass, which by reason of their optical properties, differing from those of the kinds of glass which alone were previously to be obtained, have given rise to improvements in optical instruments, and especially in photographic objectives. The conditions of the elimination of the astigmatic errors of pencils of rays entering obliquely require that the crown glass should be of a refractive power higher than that of the flint glass combined with it. Varieties of glass, which render combinations of this kind possible, have been regularly manufactured since 1886, and since that time attempts have been made in various quarters to utilise the new kinds of glass for the elimination of the astigmatic error in photographic objectives. Thus, for instance, amongst others, the "anastigmat" of Hartnark, calculated by Dr. Miethe, was introduced in the year 1887. This objective is free from astigmatism, when the image is approximately plane, but, like all other objectives manufactured by various opticians upon the same principle, it has the disadvantage that the spherical error cannot

Fig. 1. *Fig. 2.*



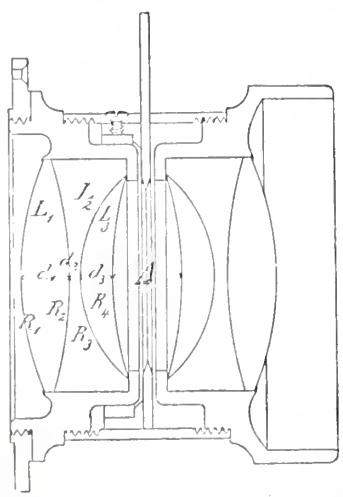


Fig. 3.

be eliminated, and hence the system has an illuminating power too feeble for most of the needs of practical photography, and is especially ill-adapted for instantaneous exposures.

The reason for this fact is that in order that the spherical error may be compensated for, the refractive power of the crown glass must of necessity be lower than that of the flint glass, which is combined with it. The construction of an "anastigmat" of good illuminating power, with the spherical error corrected—that is to say, without injury to the sharpness of the image—thus appears to be prevented by the interposition of two incompatible conditions, standing in opposition to each other, and, as a matter of fact, it has been customary in the best informed scientific circles for a long time to consider it impracticable to devise a method of construction which should combine the two properties above referred to.

Dr. P. Rudolph, of Jena, the inventor of the recently introduced "anastigmat," of Zeiss, forming the subject of a German Patent No. 56,109, was the first who succeeded in bringing forward proof of the possibility of constructing "anastigmats" of good illuminating power.

We have endeavoured to attain greater approximation to the ideal form by a method differing essentially from that adapted by Dr. Rudolph.

For this purpose we have made extensive calculations, directed at first to the single object of determining whether, as the fundamental principle of a new objective, the astigmatic error could be reduced as far as possible, in the expectation which appeared, humanly considered, to be justifiable, that even if it should prove to be impossible to eliminate the astigmatic error absolutely, it might yet be hoped to effect important improvements in the direction indicated.

Starting from the above-mentioned facts, well established theoretically, in accordance with which a crown glass of lower refractive power than that of the flint glass combined with it must be used to eliminate the spherical error, and a crown glass of higher refractive power than the flint glass component for the elimination of the astigmatic error, it was sought to determine by strict calculation, how far a doublet, each half of which was built up of three lenses, would be able to fulfil the conditions required for the elimination of the two aberrations, the spherical and the astigmatic. The separate components of such a system might with reference to the result be conceived to be so made up that they should consist either of a negative flint glass a, figure 1, enclosed between two positive crown glasses b' and b in such a way that one of the two latter, say b, should have a higher refractive index, and the other, say, a lower refractive index than that of the enclosed flint glass b', or be made up of two negative flint glasses a, a', figure 2, enclosing a crown glass b, in which case one of the two flint glasses, say a, should have a refractive index higher, and the other, say a', lower than that of the enclosed positive crown glass b.

It was found to be possible, in both methods of construction, whilst compensating for the spherical and chromatic aberrations, not only to reduce the astigmatism, but to eliminate this last in a manner theoretically perfect. Of the two methods of construction under consideration the latter (crown glass between two flint glasses) is found to involve unfavourable forms for the separate components, and the employment of such kinds of glass as have their practical applicability limited by disadvantageous peculiarities, so that the former combination (flint glass between two crown glasses) was exclusively adopted in the further working out of the problem and the determination of the constants of an objective capable of being carried out in practice. As an example, there is depicted in figure 3 of the appended drawing an objective of the kind described, of an equivalent focal length of 240 mm., and a free aperture of 36 mm., of the natural size, and in axial section.

The maximum effective aperture is 30 mm., corresponding to one-eighth of the focal length.

The constants required for the construction of the objective are as follows:—

Radii of Curvature.	Thickness of Lenses.		Kind of Glass. nD.	nG.
$R_1 = -R_8 = 45{\cdot}835$	$d_1 = d_6 = 7{\cdot}334$	$L_1 = L_6$	1·61310	1·62683
$R_2 = -R_7 = 54{\cdot}324$	$d_2 = d_5 = 1{\cdot}833$	$L_2 = L_5$	1·56804	1·58182
$R_3 = -R_6 = 19{\cdot}853$	$d_3 = d_4 = 4{\cdot}584$	$L_3 = L_4$	1·51497	1·52663
$R_4 = -R_5 = 49{\cdot}088$	$\triangle$ (distant apart)	$= 11{\cdot}00$		

All measurements, radii, thickness, distance, etc., are expressed in millimetres, the kinds of glass are designated by their exponents of refraction for the line D (^nD) of the solar spectrum and for the line of the spectrum of hydrogen H_8 ($^nG^1$).

The following are found by calculation to be the conjugate distances (F') for rays impinging upon various zones of the objective, and directed parallel to the axis:—

For axial rays $\begin{cases} FG^1 = 223{\cdot}065 \\ FD = 223{\cdot}275 \end{cases} \triangle = -0{\cdot}210.$

For the intermediate zone $F12$ $\begin{cases} FG^1 = 221{\cdot}400 \\ FD = 221{\cdot}360 \end{cases} \triangle = +0{\cdot}040.$

For the marginal zone $F8$... $\begin{cases} FG^1 = 223{\cdot}495 \\ FD = 223{\cdot}442 \end{cases} \triangle = +0{\cdot}053.$

If a principal ray inclined at an angle of 30 degs. to the axis be calculated through the system, and the position upon it of the image point of the sagittal rays, and those of the meridional rays be determined, a measure of the residual astigmatism is found in the distance of the two points. This distance amounts, in the case of the objective chosen as a specimen, to 1 to 2 mm. when the image formed by the meridional rays is flat; and this residual amount of astigmatism has no greater unfavourable effect upon the sharpness of the image formed by the marginal rays than that caused by the secondary spherical aberration in the axis.

The lens just referred to as an example, based upon strict calcula-

tion, is symmetrically constructed, but the combination of two absolutely identical halves is not to be regarded as a special characteristic of the objective system under consideration; the only characteristic mark of objectives of the new kind is rather the combination of separate systems independently corrected for spherical, chromatic, and astigmatic error, each made up of three lenses, the glass of these last having refractive indices properly graduated in the manner described; indeed, one system of the objective might have an external form differing from that of the other; or, in the same objective, one system might be built up as in fig. 1, and the other as in fig. 2. Any such modifications may be undertaken by a calculating optician without difficulty, but from a practical standpoint they are to be regarded as purposeless, since the more simple symmetrical form satisfies all the conditions herein taken into account to a sufficient extent. Furthermore, since each of the two separate systems constitutes in itself an objective corrected for spherical, chromatic, and astigmatic errors, each may be employed alone as a simple photographic objective.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is: (1) A photographic doublet, the two component system of which are each corrected for spherical, chromatic, and astigmatic errors, being to this end made up of three lenses, as follows: either (*a*) of a negative lens enclosed between two positive lenses, one of which has a higher and the other a lower refractive index than the enclosed negative lens; or, (*b*) of a positive lens enclosed between two negative lenses, of which one has a higher and the other a lower refractive index than that of the enclosed positive lens. (2) The employment of a single system of the kind described in claim 1 as an independent photographic objective, substantially as hereinfore described."

Judging from collotype reproductions of some tests, we may safely say that this lens marks a distinct advance in photographic optics, as a lens of $5\frac{7}{8}$ in. equivalent focus covers sharply a plate $5\frac{5}{8}$ in. square. The glasses employed are a heavy barium-silicate crown, a baryta-light-flint, and a soft silicate crown, as stated above, from the Jena glass factory.

The lens is constructed in two series, series III. working at *f*/7·7 and series IV. working at *f*/11. They are, of course, somewhat high in price, and we append a few examples from the price list.

No.	Focus	The lens will sharply cover with *f*/7·7	*f*/15·5	*f*/62	Price.
00	$3\frac{5}{8}$	$2\frac{3}{8}$ by $3\frac{5}{8}$	$3\frac{1}{4}$ by 4	$4\frac{3}{4}$ by $6\frac{1}{4}$	85s.
0	$4\frac{3}{4}$	$3\frac{1}{2}$,, 4	$4\frac{1}{4}$,, $6\frac{1}{2}$	7 ,, $5\frac{1}{2}$	90s.
1	$5\frac{7}{8}$	$4\frac{3}{4}$,, $5\frac{7}{8}$	7 ,, $5\frac{1}{8}$	$6\frac{1}{2}$,, $8\frac{1}{2}$	110s.
3	$8\frac{1}{4}$	7 ,, $5\frac{1}{8}$	7 ,, $9\frac{1}{8}$	$9\frac{1}{2}$,, $11\frac{3}{4}$	160s.
5	$10\frac{5}{8}$	$8\frac{1}{4}$,, $10\frac{1}{2}$	$5\frac{1}{3}$,, $11\frac{3}{4}$	$11\frac{3}{4}$,, $15\frac{1}{2}$	240s.
7	$14\frac{1}{4}$	$11\frac{3}{4}$,, $14\frac{1}{8}$	$15\frac{1}{2}$,, $19\frac{1}{2}$	$19\frac{1}{2}$,, $23\frac{1}{2}$	375s.

Series IV. is specially intended for reproductions and copying large objects, the shortest focus being 12 ins.

We hope to have an opportunity of practically testing these lenses shortly.

Speed of Plates, and Halation.

By J. Pike.

There has been some discussion of recent date relative to the suitability, for architectural interiors, of *plates* of ordinary or extra-ordinary rapidity, it being argued, to put it briefly, that to prevent halation, or at any rate lessen the chances of its appearance, the slower plates are the better. For my part I am inclined, and have every reason to think, that "speed" has very little to do with the case—that as a matter of fact the speedier and consequently higher priced plate (and this may be as a rule taken to mean a plate unstinted with regard to richness of film) is to be preferred.

I have used ordinary and cheap, rapid and costly plates with almost equal success.

A most important item to consider is the value of the plate as a "density" giver. If we are able to get on a certain plate extreme density (by which I mean the density which in printing allows no light to pass), likewise gradations upwards to clear glass, we have a sensitive surface which may be relied upon for most if not all purposes. I believe all the best well-known makes of plates are up to the required standard; the fact that one worker gets better results on certain plates being no proof that the other brands are not what they should be. We hear of people not being able to get density with certain very rapid films; this is, I take it, simply a matter of exposure and development.

This initial standard achieved, the thicker the coating of sensitive film the better. This is, however, of more importance when photographing landscape subjects where branches of trees are showing up against a bright sky, at the same time that the foreground requires a more extended exposure; but here again we may go too far and eliminate from our negative all idea or suggestion of distance and atmosphere.

An efficient backing is to be considered. Backings are plentiful as leaves in Vallambrosa—anything full of colour and that will stick, from shoe-blacking to dyed collodion. American cloth to carbon tissue may be used, care being taken that the backing is really in optical contact with the glass, not dabbed on here and there and anyhow, but in actual contact all over. An application to the *sensitive* surface, of a faintly tinted collodion, *i.e.*, enamel collodion with a trace of picric acid or eosine, may on occasions prove useful; the collodion is *quickly* removed, prior to development, with methylated spirit.

Lastly, and really the point of greatest importance, remains to be referred to. This is the "illumination of the subject." I don't know, of course, for certain, and I should be the last to declaim against any good make of plate, but my experience is that as a rule all new-fangled goods are for the dilettante amateur, and are seldom used by the practical worker. Having been able for some years, by certain simple methods, such as a good plate, effective backing, and careful consideration of illumination, to get the most satisfactory results, what more does he want? Granted that we wish to photograph a room through the window of which the sun is shining, throwing down its rays and obscuring the frame and lattice work. This we can do, and get a very fair and accurate representation of that which we focussed. But if we could not for the sun's rays *see* the lattice work, etc., we must not be surprised if we fail to see it in the negative. If we want to show the window in all its glory of delicate tracery, we wait until the light is better suited for our purpose, and if we can *see* clearly all the detail there is to be seen, we may safely rely upon getting the same on our plate. An interior may be full of conflicting lights, bare and stained glass alternately all round the place—nothing so good here as a very full exposure, and in such a case a very rapid plate comes in very usefully, as we may make an hour or so do where double the time would have been necessary. It is astonishing what a difference a screen (funnel shape) in front of the camera makes sometimes. I have made such of cardboard, velvet-lined, and by means of tape round the wide part to regulate the diameter have been able to shut out all the extraneous side light. It's astonishing how much extra detail must be seen on the screen. In fact, treat the lens as we do our eyes—when in bright light we shade them with the hands and thus get a clearer vision of that which we are looking at. To make such a screen, we cut out of thin cardboard two fan-shaped pieces about six or eight inches in depth. Having made the neck of funnel which should fit tightly upon the lens (the front hood removed if possible, so as to get greater depth), the neck may be carried over the diaphragm aperture, cutting a slit for the purpose of inserting the "stops." We then bend the cardboard round the lens, cutting to shape, so as to have the funnel in two pieces, one folding a little over the other. Attach them to the neck, and line with black velvet, we may then regulate the diameter by means of tape inserted at about one inch or so from the widest part, or by means of a strong elastic band which may be simply rolled up, moved up or down as the case requires; for exposures, interiors that is, a piece of velvet to hang over the funnel answers all requirements.

Briefly then our amateur workers may rely upon it, that of more importance in the prevention of halation, than the speed of plates, are a reliable backing, some considerable care in selecting the most suitable light, and *plenty* of exposure. Finally as a rough illustration of what I mean by plenty of exposure, take a certain imperfectly-lighted church interior. We may be doubtful about the windows, can focus clearly the altar, but there's a bit of carving on some pews, or even a footstool under a seat, the details of which we would like to have; we can barely see it on the screen, but we know it is there or should be. The thing to do is to expose, for that bit of carving or that footstool. Even if it means three hours instead of thirty minutes, by the use in development of a well-restrained pyro-sulphite solution, we may in nine cases out of ten rely upon getting a most satisfactory negative.

Mr. Francis Powell obtains his knighthood as President of the Royal Scottish Society of Painters in Water Colours, and not, as was stated, as President of the Royal Society of Painters in Water Colours, in succession to Sir John Gilbert, who remains, and will remain, it is hoped by his friends, for many years to come, the President of the latter society.

General and Photographic Chemistry.—XVIII.

By E. C. CONRAD, F.C.S.

(*Continued from page* 389.)

DEVELOPERS.

Pyrogallol, syn., pyrogallic acid, pyro, trihydroxybenzene $C_6H_3(OH)_3$. M.: (1) By heating gallic acid with water. Eq.: $C_7HO_5 = C_6H_6O_3 + CO_2$. (2) By dissolving phenol in sulphuric acid, and passing chlorine through the mixture, afterwards heating the resulting compound with caustic soda. (3) Mix dry gallic acid with about three times its weight of glycerine, and heat to 200° C., until the carbon dioxide formed ceases to escape. P.: Occurs in light, feathery, needle-shaped crystals of a pure white colour, freely soluble in water and alcohol. Aqueous solutions of pyrogallol absorb oxygen and turn brown, and the presence of an alkali increases the rapidity of this reaction. The brown colour formed during oxidation is destroyed by sulphurous acid, or the sulphites and stains on the hands can be removed by a mixture of bleaching powder and citric acid. Pyrogallol is, chemically speaking, not an acid but an alcohol, like the allied substances, carbolic acid and hydroquinone. It is poisonous if taken in quantity, producing suffocation and violent pain in the chest; the best antidotes are potassium chlorate and brandy. *Tests:* Solutions of the ferrous salts give purple-blue or blueish-black colourations, the ferric salts a red colour. U.: An alkaline solution is used to estimate the oxygen present in a mixture of gases or a given volume of air. U. P.: Pyrogallol is still the principal developer for photographic plates, being largely used by amateurs and almost exclusively by professionals. There are a very large number of formulæ given for its use, most of which recommend the addition of sulphite of soda to retard the formation of the brown colouration, potassium bromide as a restrainer to render the reducing action slower and more uniform, and ammonia as an accelerator.

Ferrous Oxalate, FeC_2O_4. This is already mentioned under oxalic acid. It is a yellow powder, insoluble in water, but soluble in solutions of the alkaline oxalates. It is best prepared as a developer by adding one part saturated solution of ferrous sulphate to four parts saturated solution of potassium oxalate. U. P.: For developing bromide paper, lantern slides, etc. The Continental professionals use it largely for general plate work. It does not stain like pyro, but is not so easily controlled.

Hydroxylamine Hydrochloride, NH_2OH,HCl, already mentioned under the compounds of nitrogen.

Quinol, or Hydroquinone, $C_6H_4(OH)_2$. M.: By heating para-iodo-phenol with potash, or by adding potassium bichromate to aniline dissolved in sulphuric acid, decolourising the liquid with sodium sulphite, and adding ether to dissolve the quinol, and finally distilling off the ether. P.: Quinol is usually a nearly white crystalline powder, but a variety manufactured by Dr. Byk has a bright yellow colour and is said to be quite permanent in air. Quinol is soluble in water, alcohol, or ether. *Tests:* An aqueous solution is turned red by ammonia, and green by ferric chloride. The above are the most important substances used in photography as so-called developers, but as theoretically any deoxidising agent could be used, it is not surprising that a very large number of compounds have been subjected, most of the more recent of which are allied to pyrogallol and quinol, and are manufactured by more or less complicated processes. The more important are:—

Eikonogen, a yellowish white powder, $C_{10}H_5NH_2ONaHSO_3$, a sodium-amido-beta-naphthol-sulphonate.

Rodinal, a liquid para-amidophenol.

Metol, a white powder described as a mono-methyl-para-amido-meta-cresol.

Amidol, a white crystalline powder, $C_6H_3(NH_2)_2OH$, a dinitro-phenol.

(*To be continued.*)

A Saturday Afternoon at the Tower.

By the Man about Town.

"No one in whose breast an interest in the annals of his country has been awakened, can approach with indifference this Royal Castle of our forefathers. As we descend Tower Hill, the hoary walls of the ancient pile rise before us amidst the surrounding mass of more modern buildings, grim witnesses of a bygone age. They remain amongst us symbols of the rugged times when, amidst the struggles resulting from ill-defined rights and uncontrolled passions, were laid the mighty foundations of our country's present prosperity and peace. Dark shadows of the past enshroud the gloomy fabric, but they serve to throw into stronger relief the justice and the liberty, the intelligence and the refinement which illuminate our day. Whilst contemplating the Tower of London, the mind spontaneously reverts to the Norman Conquest, an event which, although it burst upon our island as a devastating storm, we look back upon with interest, as contributing to the subsequent more vigorous development of national character."

Thus writes the historian of the Tower. After reading these thought-awakening words we pondered deeply over the great historical interest of this ancient structure—prison, fortress, and palace, that has for centuries defied the ravages of time and the elements—as we wended our way towards the Tower gates on the afternoon of Saturday, the 3rd inst. The public celebration of the Queen's birthday being in progress, the beefeaters were arrayed in more gorgeous apparel than usual. Naturally, their pomposity, their general impressiveness, and their awe-inspiring influence was at first sight accordingly increased. Some of the youthful aristocracy from the vicinity of Whitechapel and the surrounding salubrious districts, who had dared to enter at the gates and cross what was to them the sacred threshold of the Tower, were, immediately they were discovered by the custodians, threatened in a terrible voice with annihilation unless they instantly cleared out. At the sound of that voice they shrank back abashed, afterwards, however, mustering up enough courage to peer through the gateway, content with feasting their eyes upon the colossal frames and brilliant garments of Her Majesty's wardens of the Tower.

The L—— Camera Club had arranged an excursion to the Tower this afternoon, the time for assembling being 3 o'clock. Just before the appointed hour a group of photographers (including two members of the fair sex, one of whom was armed with a pretty hand-camera) might have been seen waiting for the arrival of the leader of the party who had in his possession the pass for the whole Club; for until the official permission had been produced no photographic work could be commenced. The time was whiled away in chatting to a genial beefeater, but some of the members of the party were beginning to register a vow that if the leader did not soon arrive he should be shown no mercy at all when he did eventually turn up, but should be slain with a tripod, and his mangled remains buried deep down below the moat.

At length the permit for the party having been shown, we are free to take whatever views we please of the exterior, and of the exterior alone, for our permission only goes that far. To photograph throughout the whole of the Tower no less than four separate permissions have to be obtained. Our party gradually gets scattered, and camera legs are seen strutting out here, there, and everywhere. The light is found to be wrong for several "shots," among them being an eastern view of the Byward Tower and also the Traitor's Gate. Several try to take the Bloody Tower, but have to wait a very long time before they can make an exposure, on account of the people that are continuously pouring through the gate. A large number of the poorer class of Jews from the neighbourhood of Petticoat Lane are seen walking about. Most of them favour us with a wondering stare, while some of them completely block up our field of view for the time being, and look at us in the same self-satisfied, patronising manner that they might regard the inmates of the Zoo. One of the beefeaters told us that considerable trouble was occasioned them by a certain section of the Hebrew race who came to the Tower every Saturday (it being their Sabbath-day), and who would persist in doing things that they were not allowed to do, such as walking about in all sorts of forbidden places, until they nearly drove the custodians frantic.

The great White Tower, which rears its four stately turrets high above the surrounding buildings, attracts the notice of some of the members of the party. This structure was erected in the time of William the Conqueror, under the direction of Gundulph, Bishop of Rochester, who, notwithstanding his office, exercised his abilities as a military architect, and produced a magnificent specimen of Norman architecture. It is a massive quadrangular structure, occupying the central part of the Inner Ward. It measures 116 feet from north to south, and 96 feet from east to west, the height being 92 feet. The external walls are 15 feet thick It is soon discovered, however, that it is impossible to take a view of the White Tower without the aid of a wide-angle lens, except from the south-east near the Salt Tower. Those who did not possess one of these luxuries, therefore, did not attempt to take this view.

One or two other shots are made, and then a good-looking beef-eater is invited to stand for his portrait, two of his comrades having been previously photographed by the side of a cannon. After a little harmless flattery and cajolery, our gorgeous friend is posed before a doorway, and the cameras begin to frown upon him. When the awful deed has been done he gives us a little general advice on the photographic features of the Tower and its contents, and advises us to get authority to "take" (photographically only, of course) the Crown Jewels. This permission can be obtained from Sir Michael Biddulph, the keeper of the Jewels. We, like Captain Cuttle, "make a note" of the words of wisdom that fall from the mouth of our friend in the gorgeous apparel, in order that we may duly reap the benefit of them on some future occasion.

A plate may be exposed on the Beauchamp Tower, its style of architecture being that of the reigns of King John, 1199, and Henry III., 1216. St. John's Chapel, in the White Tower, is said to be one of the finest and most perfect specimens of Normau architecture to be found in this country. St. Peter's Chapel, however, is a plain stone building, devoid of ornament but not of interest; for here the bodies of many illustrious prisoners (including the famous Lady Jane Gray) lie mouldering in the dust.

Some good views of the new Tower Bridge can be obtained from the landing-stage or quay.

In order to obtain the best results, however, it is necessary to get the required permissions for a day in the week when the Tower is not so liberally patronised by the public, so that the photographer can work in peace without fear of being troubled with the presence of gaping "dead-heads."

The following are the permissions that have to be obtained:—From the constable of the Tower for the exterior work; from the War Office (on the recommendation of a Royal Academician) for the White Tower, St. John's Chapel, and the Armouries; from Sir Michael Biddulph for the Crown Jewels; and from the Chaplain for St. Peter's Chapel.

Holiday Resorts and Photographic Haunts.

ROUEN.

F. B. MUFF.

AMATEUR photographers who are fond of architectural work cannot spend a week better than at Rouen.

Leave London Bridge or Victoria any evening at 8.50, taking second-class return ticket for 33s. 3d., and you arrive at Rouen at 5.40 the following morning.

The Hotel de la Poste is clean, comfortable, reasonable, and central.

The cathedral is, of course, the first attraction, though it is so shut in that it is next to impossible to get a general view, but the portals, W., N., and S., are very fine.

Immediately to the E. is St. Maclou in flamboyant style. The cloisters, now a school, should not be overlooked.

Close at hand also is St. Ouen's, considered by many to be the gem of Gothic art.

The Palais de Justice is worth a plate, and the Hôtel du Bourgtheroulde is ornamented with a series of marble reliefs representing the "Field of the Cloth of Gold."

There are many picturesque bits in the narrow streets, such as fountains and old timbered houses, but it is necessary to rise early to avoid the crowd.

The river, with its shipping, is good for a plate or two, and fine views of the city may be obtained from Mont St. Catherine (E.) in the morning, and from Canteleu (W.) in the afternoon.

Innumerable excursions can be made in all directions by road, rail, and river. For example, steam down river to Dieppedalle, walk through forest to St. Georges de Boscherville—fine old Norman abbey church, built 1066. It is in excellent preservation, too much so in fact, for the interior has recently been whitewashed throughout! Don't omit to see the chapter-house in farmyard to left. Lunch at cafe opposite to church, and walk back to Rouen by Canteleu.

Take steamer for Havre as far as Le Passage, walk in a few minutes to the Abbey of Jumieges, a very fine ruin, but permission to photograph inside was refused. Parish church, near to, is curious: piers have Ionic caps. Exposure interior, 15 min. *f*/16. Walk to Yainville Station, rail to St. Wandrille, walk to the secluded Abbey of Fontanelle, now seat of Marquis de Stackpool. Permission to photo may be obtained. The cloisters are well worth two or three plates; 45 sec. *f*/32. Return by rail to Rouen.

Early train to Pont de l'Arche Church, walk on banks of the Eure to Lery Church, then to Herqueville, ferry across the Seine, thence to Muids and to Les Andelys, overlooked by Chateau Gaillard, the famous castle of Cœur de Lion—extensive view. Return by omnibus to Gaillon and rail to Rouen—lovely country throughout, and any number of farmyard bits, harvesting, etc.

A day may be well spent at Beauvais, with the loftiest cathedral in the world, and the interesting Church of St. Etienne. En route a plate or two may be exposed on the Abbey Church of Gournay whilst waiting for trains.

There is no restriction placed on photography in Rouen or in the neighbourhood, though forts and barracks must be avoided. Permission to photograph interiors of churches is readily given by the sacristan.

June is an excellent month for a visit, the roads are admirable, and cyclists would find Rouen an unusually good centre. The French Government maps are up to date, and at a penny a sheet put our ordnance maps to shame.

Murray's Guide is the best in English or Joanne's in French. Ruskin's "Seven Lamps" should be read before starting.

The light is good, and we found Ilford ordinary plates quick enough for our purposes.

Celluloid films are a saving in weight and most useful for interiors.

Half-plate kit is the most generally useful, and a wide-angle lens is necessary for architectural work.

There are many opportunities for the hand-camera in street, river, and field scenes.

We had no trouble with the custom house officers either going or returning.

NORMANDY.

It is a sage and philosophical proverb which says you must cut your coat according to your cloth. In the matter of summer outing your desires may soar to a month in Algeria, or six weeks in Cairo, but when time and purse are both limited, it is the best plan not to go far afield.

We decided to go to Normandy last August, because it lies close to our own shores. We left Newhaven about half-past eleven, and by three o'clock the outline of the French coast could be clearly seen from the steamer's deck. It stretched along the southern horizon, snow-white cliffs tipped with emerald green; then gradually as the steamer approached we saw a town lying under the cliffs, and in the foreground on either side of the harbour a great crucifix facing the sea. This was Dieppe. We took our seats in the train for Rouen, which we reached about half-past four. This city has a dual existence; on one side of the river lies the manufacturing district, on the other old Rouen. Here every narrow street is rich in fourteenth and fifteenth century houses; every alley and byway teams with quaint corners and pretty bits; every fresh turning holds a fresh surprise. It is in this part of the city that the three famous churches of Rouen are situated. The cathedral lies just out of the Rue des Carmes; you turn out of the bustling narrow streets, and there confronting you, making you hardly believe your eyes, towers the vast and glorious pile. St. Ouen is really the more perfect and harmonious edifice, but there is much that is truly magnificent about the cathedral. The square in front of it catches all the afternoon sun, and a joy it used to be to enter the western portal and escape from the maze of heat and sound into the cool, silent church. There is no echo of the outside world here, except when the little padded doors open and shut as someone goes out or comes in. In the nave gleams a rose window, all purple and ruby like a great jewel; the many-coloured light falls on pictures of saints and angels, on exquisite sculpture, and on the bowed heads of the worshippers dotted here and there throughout the church. High overhead soars the lofty vaulting; vague in the dim light lies the far confines of the cathedral—it is like the "vasty halls of death." Here you can sit while earth and things earthly slip away from you, and the spirit of the place laps you around with peace, like a kind hand smoothing out the wrinkles of grief and worry, or a soft voice whispering "It is well."

One of the minor churches of Rouen is St. Vincent, a pretty little Gothic edifice not far from the quay.

At the top of the Rue de la Republique is the fountain of St. Mary. It is a grand and elaborate structure, with many allegorical figures on it.

So fascinating did we find old Rouen that it was with difficulty that we could tear ourselves away to take the orthodox trip up the Seine. We went one morning as far as St. Adrien, a lovely village nestling amongst trees at the foot of the chalk cliffs. It possesses an interesting but not beautiful church, half of which is hollowed out of the cliff.

We rounded up our holiday by going to Lisieux. This old-world town lies in a hollow among rolling green hills, the grassy heights rise round it on every side covered with rich and luxuriant orchards. Nestling in the midst of this verdure lies Lisieux, "like the island of Avilion, where falls not hail, or rain, or any snow, nor ever wind blows loudly, but it lies deep-meadowed, happy, fair with orchard lawns, and bowery hollows crowned with summer seas." Here the enraptured artist and photographer find whole streets of old black-timbered houses with dormer windows and gables projecting over the basement below.

St. Pierre, once the cathedral, now the principal church of Lisieux, stands at one end of a large square. When we visited it we found it quite deserted, a procession just having filed out, but there still lingered about it the fragrance of the incense, and the lady-chapel, founded by the Bishop of Beauvais, was glorious with white flowers and green foliage.

We purposed visiting other places in Normandy, but the intense heat which prevailed at the time drove us home.

THE PHOTO-FIEND IN FRANCE.

By H. GOODWILLIE.

HAVING taken a circular ticket to Normandy, I arrived at Dieppe (*via* Newhaven) one foggy afternoon, towards the latter part of August, 1892. A heavy thunderstorm that night cleared the atmosphere, and early next morning camera and I were at work. There are lots of quaint fishing and character studies to be got here; in fact, "to take or not take" was my principal difficulty all the time I was in "La Belle France."

From Dieppe I went to Havre (*via* Malaunay), and found the cholera in occupation, forty seven deaths the day I arrived there. There is not much in Havre to snit the photo-fiend; it is a big seaport town, very hurried and very commercial. From thence I took the steamer to Trouville, which is about three-quarters of an hour's run across the mouth of the Seine. Leaving Trouville I went to St. Malo, *via* Caen, Bayeux (of tapestry renown), Coutances, Avranches (a funny little town, perched on top of a hill, at one time in the occupation of the English), and Dol. I could have gone to Cherbourg with my ticket, but reflecting that it would be possibly less photographic than Havre, and as time was pressing, I cut it out.

There are a great many short excursions which may be made from St. Malo—Dinan, Cancale (an oyster fishery, very quaint), St. Michel (an archæologist's rather than a photographer's paradise). The Channel Islands can easily be visited from St. Malo, steamers running two or three times a week. From St. Malo I went to Paris, and thence to Dieppe (*via* Rouen), and so home.

During my trip I used a hand-camera (home-made) exclusively, and Ilford Red Label plates (new issue). I put a label on each box, "Craint la lumière," but I had not the slightest difficulty anywhere; both at Dieppe, going over, and at Newhaven, on my way home, the Customs officials accepted my statement, that I had nothing liable to duty, and did not even open my luggage. I brought Wheeler's negative masks, and repacked the exposed plates with them in their own boxes, and I had not a single plate scratched or injured in any way.

The circular ticket I found to be a very great acquisition. It is issued jointly by the London, Brighton, and South Coast Railway, and the Chemin de Fer de l'Ouest of France. The mere sight of the cover was sufficient to pass me in many places, and the officials everywhere endeavoured to facilitate me.

There are, all through Dieppe, curious old houses on which a few plates might be exposed. The principal church, that of St. Jacques, has a very good rose window, and is a very fine old building. The beach affords any number of snap-shots. The fish auction and vegetable market were taken early in the morning, when business appeared to be pretty brisk.

ON THE SOUTH COAST.

By H. N. RUDGE.

A VERY pleasant holiday of about a month may be spent at Southampton, a town which, besides possessing several noteworthy features in itself, forms a convenient centre from which to reach other near-lying places of interest, and in particular the Isle of Wight.

Doubtless, one of the first subjects which will strike the visitor on passing through the High Street is the ancient and picturesque Bargate, and the easterly side will be the one generally preferred, both on account of its being the older in point of restoration, and of the view being less interrupted by obtrusive details of the adjoining shops, etc. Early rising must, however, be resorted to, to get the best lighting on this side.

Having secured negatives of this, and of the Avenue, about a mile from the town, we will next turn our attention to the various excursions that may be made within the day from Southampton.

One of the first of these should be that to Netley Abbey where a delightful day may be spent amidst its picturesque ruins. The train service from the Dock station to Netley is a good and frequent one; the journey takes thirty minutes, and there remains a pleasant walk of about two miles from Netley to the Abbey. A small entrance fee is charged at the gates, and no objections to the camera are raised.

The town of Winchester lies some twelve miles from Southampton, and possesses much that is of interest, chief of which is the cathedral; permission to photograph inside is readily granted by the courteous dean. The interior is well lighted, and in fair weather ten to fifteen minutes suffices for the nave, whilst the choir needs at least double that time.

Almost any part of the Isle of Wight can be reached from Southampton, and the return made in a single day; but so numerous are the subjects for the camera with which the island abounds, that it is no easy matter to decide where to commence.

The run by steamer to Cowes occupies an hour, of which at least half is spent in reaching Caldshot Castle at the mouth of the Southampton Water; after passing this, provided the weather is clear, some extensive views of the Solent may be obtained.

On arriving at Cowes, and deciding to visit Whippingham and Carisbrooke, we cross by the ferry from the pier to the east side of the river Medina, and after a walk of two and a half miles inland reach Whippingham Church. This church was rebuilt in 1860, under the direction of the late Prince Consort, and inside, in the chancel, is a beautiful monument by Theed to the late Prince, erected by Her Majesty. Continuing our way another two miles, we arrive at Newport, and a mile further on brings us to the celebrated Carisbrooke Castle, which stands on an eminence overlooking the village of Carisbrooke and the surrounding country for some miles.

Among the many places that may be reached by rail from Cowes, Shanklin will doubtless be a favoured one, if merely on account of the Chine, a remarkably pretty wooded ravine.

In the month of September a hurried visit of a couple of days was made to Dartmouth. The harbour, which is surrounded with hills, covered with woodland, through which the houses prettily peep, is a delightful spot; and the river Dart, with its many lovely windings, accompanied by the richest foliage on either side, affords scenery that deservedly gives rise to its name of the "English Rhine." Dartmouth Castle stands at the entrance to the harbour, and is best taken from the rocks below when uncovered by low tide.

In the event of a wet day, the time may be pleasantly passed in a visit to the parish church, wherein is a fifteenth century screen of detailed carving, and worthy of a plate.

RICKMANSWORTH.

By W. S. BERRIDGE.

RICKMANSWORTH, being so near London, ought to be a great deal more patronised by amateur photographers than it is. I can safely say that anyone going there with his camera will not come away without bringing back some valuable negatives, provided he knows something about exposing, developing, etc. The country round about is as varied as it is possible to be.

I should class the scenery into three classes, namely, "river scenery, with its rustic bridges," "open landscape," and "woodland scenery."

Of course, the first part of the programme is the getting there, which is also the simplest. You can book from any of the underground stations direct to Rickmansworth, the fare being 2s. 1d. return from Baker Street. Changing at Baker Street, you proceed to the St. John's Wood line, where you will find trains run about every three-quarters of an hour. The journey takes a little under an hour, so that one does not lose much time in travelling. Arriving at Rickmansworth, you cross over to the other platform, then turn to the left away from the town and towards the village which is called Mill End, Rickmansworth. When nearing the village, after about ten minutes' walk, look out for a short lane on the left-hand side which leads direct to the River Colne. Here you will find subjects for a plate or two. Then cross the bridge and walk along the river side, where you may get some good studies of cows drinking, or even wading across the stream. I find that the cows (also bulls) generally come to the water at about 2 o'clock. When you have satisfied yourself with this part of the country, return back again, over the bridge, up the lane, and continue through the village. Here you will get some good snaps at the old-fashioned inns, with

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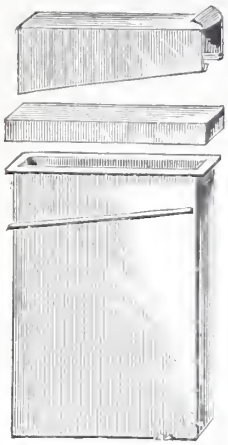
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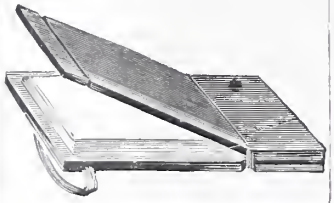


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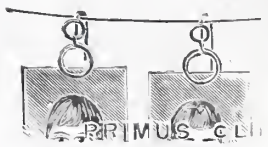


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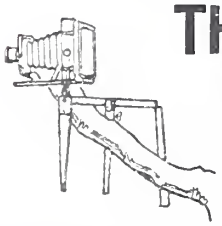
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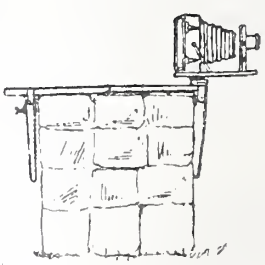


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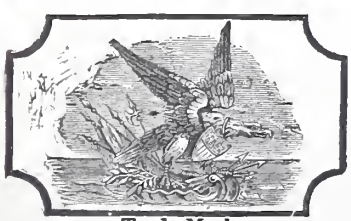
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their old sign-boards hanging from trees of still greater age. Passing on you will almost immediately come to an inn, on the right-hand side, called the "Plough," which I can thoroughly recommend for good accommodation, both board and lodging at a ridiculously low price. Here you will get any information as regards the best places to photograph. Walking on for a few hundred yards, you will see another turning, also on your left. Passing over the bridges and looking back, one will get a very pretty view of the bridge and cottages, which, if it is a bright day, will be brilliantly reflected in the water. I think you will find it worth while exposing a plate from the bridge, looking down the river. Still further on, you will come to another river which is noted for its trout; you will very likely see a few fishermen about here, who add greatly to your landscape as figures. When you have passed over this bridge, climb over the railings on your left and you will get a very pretty view of the river, threading its way to the village, with its factories in the distance. Crossing over the fourth and last bridge, you come to the ice factory, by the side of which you will find a subject for another plate. Directly to the left of this is the canal, with its lock gate and barges which pass to and fro, making first-class snap-shots. Walking along the canal banks in either direction you will find subjects for another plate or two. This ends the river scenery; and now to return to something drier, namely, the woodland scenery and open landscape. Returning by the same route, just before you come to the "Plough," you will see a field on the left. Following the path for some way, you will see a clump of trees in the distance which is the Chorley Wood. I think the photographer will find some difficulty here, owing to the trees being somewhat close together and rather tall. About ten minutes' walk from here is a spring, well worth a plate; but one would require to ask his way or else he might get lost in the wood.

Returning from here there are some very good open landscapes with distance and middle distance. I think the photographer will, if he has followed this route, be glad to rest his weary limbs before returning home. To those who intend staying a day or two at Rickmansworth, there is plenty of work for them to do in the neighbourhood of Watford, including a very fine park with deer in it. I may add that there is a chemist's shop not a minute's walk to the right of the station, where are kept all the principal makes of plates, and where there is also a dark-room for developing and changing plates.

THE COAST OF YORKSHIRE.

By Alex. Keighley.

Lest an impression should be given by the title of my holiday tour that I have been treading too closely in the footsteps of others, I should like to say at the outset that the Yorkshire coast from Flamborough to Saltburn has been one of my "happy hunting grounds" for many years, as evidenced by my pictures shown at various exhibitions.

The present tour was confined to that portion of the coast between Scarborough and Saltburn. The scenery between these two points is remarkably fine—bold, rocky cliffs thrust out in ledges here and there, and washed by the salt foam; while at intervals, wherever the line of cliff has been broken and ready access to the beach made possible, fishing towns and villages nestle, whose red roofs supply a charming note of colour in the landscape.

Whitby is, perhaps, the most convenient centre for visiting this portion of the coast. From there the railway offers ready facilities for visiting Peak, Robin Hood's Cave, and Scarborough to the south, and Kettleness, Sandsend, Runswick, and Staithes to the north.

Along this coast the wind blows keen and fresh, giving a fulness and vigour to life, qualities much needed by the hard-working men and women whose existence, early and late, summer and winter, is a constant struggle with the sea. At early dawn in the fishing villages you may see the flickering lanterns on the beach, and you may hear the peculiar and not unmusical "Oh, ho, ho!" of the fishermen as they haul down their cobles to the sea, and sail away before sunrise. During the day the beach is the scene of endless activity, in which the women play the most prominent part. When evening approaches, the first returning sail is sighted, and the whole of the village flocks out to meet it, women, children, cripples, and old men.

As the sail approaches it is recognised by the onlookers as the *Lively Polly*, the *Good Samaritan*, the *Betsy Jane*, as the case may be. The coble approaches, the sail is lowered, and when it is riding on the breakers, which carry it forward with a bound, one of the three men forming the crew flings a rope, which is seized by one of the crowd. Then all lend a hand in "hauling in;" the wife, the grandmother, the toddling child, the old man, all form in line, the crew of the boat leap ashore and lay hold with the others, and with the "Oh, ho, ho!" repeated every moment as a signal for "a long pull, a strong pull, and a pull altogether," the boat is hauled up, stern first, oars and spars having been first laid down to serve as rollers, and to protect the keel from the rough rocks.

Then follows the unloading; the freight of many various kinds of fish, silvery and glistening, are displayed for sale on the beach, the larger ones singly, the smaller ones piled in baskets. One of the fishermen officiates as auctioneer, and the spoils from the sea are rapidly knocked down lot by lot to the highest bidders. After this is over no time is lost in packing the fish into barrels and despatching it to the station.

If you venture to take a walk along the beach under the shadow of the great cliffs, be very wary of the tides, for there is little hope of escape if you are hemmed in by the stealthy and rapidly advancing waves; the cliffs offer but little foothold for climbing, and are in many cases overhanging. In such a ramble you will probably meet bands of sturdy fishmaidens wending their way across the slippery rocks, gathering limpets for bait, and not neglecting the drift-wood, consisting of spars, broken boxes, etc., cast overboard from passing vessels and swept up by the tide.

At one village you will see at early morning streams of women and girls, each with a wooden tub tucked under the arm, all wending their way some distance up the beach, where the supply of water for the day is scooped up. The bucket when filled is gracefully poised upon the head, and they stride along the rough pathway as if 20 lb. or so was no weight at all.

So things go on day after day, save when a gale bursts with full force on the rocky coast, the wind howls and whistles, the waves dash against the dark cliffs, and the gulls shriek ominously above the clouds of spray. Then, indeed, it would be madness to put out to sea, so the work goes on indoors instead,—mending nets and lines, repairing lobster creels, making tackle, and the like. The women never seem to be idle; when other work is done, their hands deftly and industriously ply the knitting needles, and make the stockings, jerseys, and comforters which are to give warmth and comfort to husbands, sons, and brothers on many a chilly night.

It is a life attended with danger and hardship. Many of the fishermen will spin you yarns of desperate struggles with wind and wave, of hairbreadth escapes, of boats which set out but never returned, and of perils encountered when the lifeboat attempts to rescue the perishing.

In such scenes as these lie abundant material for the artist and photographer.

Societies' Meetings.

Bath.—On the 24th ult., the members accepted an invitation from Dr. Sudlow to revisit Castle Combe (by general consent the most picturesque village and Manor in the district). Between twenty and thirty ladies and gentlemen left the city at noon, travelling in brakes by way of Batheaston and Bannerdown heights to Colerne, when a brief halt was made to inspect this quaint but apparently prosperous old village. Resuming the journey through Ford, Castle Combe was safely reached in the early afternoon, where the doctor was waiting to familiarise his visitors with the hospitality of the Dower House, and pilot them to the most favoured selections of photographic picturesqueness. Camera practice was diligently pursued for fully three hours. Tea was afterwards served on the lawn at Dr. Sudlow's residence, and subsequently some photographic groups were taken to commemorate the occasion. The president of the society and party then reluctantly took leave of their host and hostess, making the return journey through Pickwick and Box. The city was reached shortly after ten o'clock.

Hackney.—Ordinary meeting held 27th ult., Mr. T. H. Smith in the chair. Messrs. Rita, Low, Frost, and Dr. Harris were nominated. Messrs. Houghton's representative showed and explained their new shuttle hand-camera, also the tele-objective lens, and examples of the work done by these two instruments were shown. Mr. Roder handed round some negatives developed by Amidol, and Mr. Roofe some with Metol. Mr. Gosling gave his report of the excursion to the Zoological Gardens. Owing to the weather only seventy plates were exposed. Mr. Wire showed some bromide prints developed with Amidol; he found that the image was somewhat lost in the fixing bath. The Hon. Sec. said that if prints were left too long in the fixing there was a great tendency towards reduction, the same remark would apply to plates. Mr. Dean showed a P.O.P. print toned to a brown colour in contradiction to Mr. Gosling's assertion that it did not lend itself to brown shades. Mr. Hudson then proceeded to give a demonstration on development. Formula he used was A, eikonogen, ½ oz.; hydroquinone, ½ oz.; sulphite soda, 2 oz.; boiling water, 20 oz. B, carbonate soda, carbonate pot., caustic soda, of each 1 oz. in 20 oz. of water. To use, take for portraiture, ½ oz. No. 1, 1 oz. water, 1 drahm No. 2; to use, take for rapid exposure 1 oz. No. 1; 1 oz. water; 2 drahms No. 2.

Leytonstone.—The annual meeting was held on 28th ult.; the President, Dr. W. Pickett Turner, E.C.C., occupied the chair. The minutes having been read and confirmed, the Chairman called upon Mr. Albert E. Bailey, Hon. Secretary, for his report for the past year, which was highly satisfactory, accounting for weekly meetings during the winter and weekly outings during the summer. A brief *resume* of the various lectures, demonstrations, and public entertainments showed a very varied and interesting programme had been gone through, special reference being made to the great success attending the first annual exhibition, which had resulted in the satisfactory balance of £24 being added to the revenue of the club. The balance-sheet of the club for the past year was next presented and adopted, showing an increase of receipts over expenditure of £38 2s. 10d. Mr. Fox proposed a most hearty vote of thanks to the retiring officers and council, and referred particularly to the untiring efforts of the Hon. Secretary, who had proved, not only at their triumph, the exhibition, but throughout the year, that he was the right man in the right place. Dr. W. Pickett Turner and Mr. Albert E. Bailey having briefly responded, the election of officers was next proceeded with, with the following result:—President, Dr. W. Pickett Turner; Vice-Presidents, Messrs. E. Widdrington Byrne, Q.C., M.P., W. B. Whittingham, J.P., A. Horsley-Hinton, D. J. Morgan, J. F. Sanderson; Hon. Treasurer, Mr. Tom Symmons; Hon Secretary, Mr. Albert E. Bailey; Assistant Hon. Secretary and Curator, Mr. Montague Atkinson; Council, Messrs. G. H. Cricks, A. T. Cufley, H. E. Farmer, A. Frost, G. H. Hart, A. J. Newton, D. G. Riddick, F. W. Wates, A. P. Wire. The Hon. Secretary announced the number of members as 136; that the subscription for the new year would remain the same, 5s.; and that before the next winter season the club hoped to be in their new hall and studio; the definite date for the 1893 exhibition had been fixed for November 20th to 25th inclusive. The Hon. Secretary wishes particularly to call the attention of both amateur and professional photographers in the vast Epping Forest district in which they work to the many advantages of this club, offering, as it does, throughout the year, an almost weekly entertainment, and use of dark-room, and, shortly, a studio, for the annual sum of 5s. On the completion of the new premises it is proposed to introduce an entrance fee, so there is no time like the present to join. The headquarters, the Assembly Rooms, are about three minutes' walk from Leytonstone Station, G.E. Railway, and the Hon. Secretary's address, Rose Bank, South West Road, Leytonstone.

Liverpool.—On the 29th ult., the ordinary meeting was held, the chair being occupied by Mr. Paul Lange. Three new members were elected. Excursions to the following places were announced:—Burton (Cheshire) for beginners, Saturday, 8th July, leader, Mr. J. T. Norman-Thomas; Puddington, Saturday, 22nd July, leader, Mr. F. Anyon. The Chairman then called on Mr. W. T. Wilkinson, of Manchester, to give his lecture and demonstration on "Photogravure." After describing the class of negative required for photogravure, a carbon positive was developed; then a ground was laid with resin on copper plate, and a carbon negative developed upon dusted copperplate, the image being afterwards etched in relief. After replying to a few questions of technical interest, the spectrum was projected from the limelight through a prism, and various colour screens interposed to show the orthochromatic value of various aniline dyes, and also demonstrating the value of different screens, both for orthochromatic work and providing a safe light for the dark room.

North London.—On the 20th inst., Mr. A. E. Smith in the chair. Mr. Oakley referred to the meeting of the Affiliation Committee on the 6th inst., which he had attended as one of the delegates of the society, and reported that the business transacted consisted of a balance-sheet being presented, and two sub-committees, each consisting of two delegates, being appointed and respectively commissioned to tilt with the English Railway Companies on the subject of reduced fares for photographers and to consider what the affiliation rules meant. Mr. Oakley had no doubt that the affiliated 5,000 awaited the reports of these sub-committees in nervous expectancy. Mr. Walker showed prints on P.O.P. paper, the toning results being unsatisfactory. Mr. Bishop advised the use with this paper of the combined toning and fixing bath made according to the formula recommended for Solio paper. Mr. Williams advised workers to make the chloride of gold they used, and, preferably to others, from Australian gold coins, as these contained no copper alloy. Mr. Morgan then gave a lecture and demonstration on the "Amidol, Metol, and Glycin-Hauff Developers." He stated that Amidol was essentially a developer for all-round work, whether for negatives, lantern-plates, or bromide paper. He especially urged the formula in which the dry crystals were added to the solution of sodium sulphite immediately before use and in cases of over-exposure, adding water and bromide according to requirements, the last mentioned even to the extent of three grains to the ounce of developer. He averred that a good printing negative could be made with Amidol as a developer, which had received only one-third of the exposure necessary to produce one when pyro was used. Metol was a developer to be used in two solutions, one being the free alkali. It was not so powerful as Amidol, and any amount of tentative work could be done with it. For bromide prints it bid fair to supersede the ferrous-oxalate developer altogether. He had been experimenting at the works of a large photographic company that day, and, as a result, it was admitted that Metol developed a print equally well with half the exposure required when ferrous-oxalate was used as the developer. The lecturer did not enlarge much on Glycin, it being a more recent introduction; but, from what he intimated, the audience concluded it would be a kind of automatic developer such as the button-pressing fraternity would gladly hail if they ever dared on development. You only had to put the exposed film in the solution and take it out when it was reduced to a perfect negative.

North Middlesex.—Technical night on the 26th ult. Mr. Barnard showed the results of his attempt to copy a daguerreotype, and appeared at last to be entirely successful. Mr. Smith related a curious experience he had had, at the outing to Cassibeury Park, of two dark spots on the focussing screen which he could not account for. He exposed, however, and on developing they came up black and consequently print white, but being in the sky space blocking out the sky hides them. Mr. Avery was of opinion that light must have been somehow reflected through the lens forming the spots. Mr. Marchant had been troubled and puzzled by a number of flies inside the camera, and suggested this as a solution. In the end everybody said it was curious, but no satisfactory explanation was forthcoming. A long discussion on films and their defects took place. A large number of members had found insensitive spots. One had a film strip completely from the support on taking it out of the box. Mr. Matthews said that in case of a celluloid film partly stripping it could be made to adhere by licking with the tongue. Mr. Gill had found a great tendency of plates to frill badly lately, and enquired whether the temperature of the developer would be the cause. It was thought to be very probable. One member suggested that the fact of being coated during the hot weather might have prevented perfect adhesion to the glass. Seven new members were elected. The outings resulted as follows: Kew, Mr. Beadle first, Mr. Smith second. St. Albans, Mr. Marchant first, Mr Smith second. Cassiobury Park, Mr. Marchant both first and second.

SOCIETIES' FIXTURES.

July 6—GOSPORT.—Excursion to Winchester,
„ 7—LEWISHAM (Camera Club).—Criticism of Prints and Negatives (good or bad). Critic, Mr. C. Davidson; second critic, Professor Lambert.
„ 8—BRISTOL (Camera Society).—Excursion to Ashton Court and Church.
„ 8—WEST LONDON.—Excursion to Kew Gardens.
„ 8—MANCHESTER.—Ramble to Monsal Dale and Ashford-on-the Water.
„ 8—PAISLEY.—Excursion to Regatta.
„ 8—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOC.—White Webbs Park and Enfield.
„ 8—GOLDSMITHS' INSTITUTE CAMERA CLUB.—Excursion to Chislehurst.
„ 8—ROCHDALE AND DISTRICT.—Excursion to Greensclough.
„ 8—HACKNEY.—Excursion to London Colney.
„ 8—LEICESTER AND LEICESTERSHIRE.—Excursion to Dovedale.
„ 10—DARLINGTON.—Open Night.
„ 10—GOLDSMITHS' INSTITUTE CAMERA CLUB.—"Halation." Mr. A. G. Bloxam.
„ 11—OLDHAM.—Ramble to Miles Platting for Queen's Park Museum.
„ 11—HACKNEY.—Demonstration: "Lantern Slide Reduction." A. G. Nunn.
„ 12—BIRMINGHAM PHOTOGRAPHERS' UNION.—Photo and General.
„ 12—PHOTOGRAPHIC CLUB.—Members' Open Night.
„ 12—EASTBOURNE.—Excursion to Lewes.
„ 12—BOLTON.—Tradesmen's Holiday (Special).
„ 13—LEICESTER AND LEICESTERSHIRE.—Excursion to Warwick.
„ 13—NORTHAMPTONSHIRE.—Annual Excursion to Stratford-on-Avon.
„ 15—HUDDERSFIELD.—Ramble: Shawclough, Longwood.
„ 15—BRISTOL (Camera Society).—Excursion to Redcliffe Church.
„ 15—PHOTOGRAPHIC CLUB.—Excursion to Burnham-on-Crouch.
„ 15—MANCHESTER.—Ramble to Lymm.
„ 15—OLDHAM.—Ramble to Alderley.
„ 15—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOCIATION.—Excursion to Battersea Park.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

RULES.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance, the *number and full title of the query* referred to.

QUERIES.

6124. **Corfe Castle.**—Is a permit necessary to photograph Corfe Castle?—H. A. C.

6125. **Hand-Camera.**—I wish to utilise my quarter-plate Instantograph as a hand-camera. Can any reader inform me whether this is feasible, and if so, recommend a suitable maker, to make necessary alterations—at moderate cost? I have a good R.R. lens.—E. Z. M.

6126. **Snap-shot Developer.**—Can any reader recommend a really satisfactory snap-shot developer? I have tried amidol, but cannot get density. I use Paget's fifty plates. A one-solution developer preferred.—E. Z. M.

6127. **Lodgings at Ilfracombe.** — Does anyone know of good reasonable lodgings at Ilfracombe suitable for two ladies and one gentleman?—METAPHORIC.

6128. **Toning Bath.**—Would any reader give me information as regards the Ilford suplhocyanide toning bath? When it has been kept a day or two the side of the bottle it is in is covered with a dirty red colour. Is it the gold that has been thrown out? If so, what remedy is there for it, and how long will it keep?—BULBROOK.

ANSWERS.

6097. **Ely, Lincoln, Peterborough.**—B. will not find much at Ely or Peterborough but the cathedrals, but can go and take some pictures of the colleges and river at Cambridge.—H. B. SMITH.

6122. **Lantern-Slide Camera.**—If "Freelance" will send me his address, I shall be happy to give him all information necessary to make a cheap and serviceable article. Should he reside in my locality will show him one I have constructed, and render him every assistance possible.—H. B. SMITH, School Street, St. Paul's, Walsall, Staffordshire.

QUERIES UNANSWERED.

June 2.—Nos. 6102.
" 9.—Nos. 6106, 6108.
" 16.—Nos. 6109, 6110, 6111, 6112, 6113.
" 23.—Nos. 6115, 6116.
" 30.—Nos. 6118, 6119, 6120, 6121, 6123.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This w much regret.*—ED. AM. PHOT.

J. CHRISTOPHER.—The best method of intensifying is to soak your negatives in an acid alum bath; wash well and then bleach in mercury solution; wash well, and redevelop with ferrous oxalate developer; then wash and dry.

O. LUNHAM.—The camera is, we believe, reliable and worth the money.

STROMA,—Use metol and potash, and feel your way in development by adding the alkali in small quantities at a time.

G. E. CARTER.—You do not state whether you are using special final support or ordinary paper, but judging from the look of it it is the latter, and if so this is the cause of your trouble. Will you write us again, please, saying exactly how you work?

F. PARTRIDGE.—(1) The hot weather is the cause of your trouble; we have met with the same trouble using the material you do. On the other hand, it is advisable to thoroughly well wash after developing and before placing in the alum, and then washing thoroughly bsfore fixing. (2) You can dilute the developer with an equal quantity of water, and it is best to use a 10 per cent. solution of acetic acid as a restrainer; it acts better than bromide with metol. (3) Yes, the intensifier is a good one.

H. A. CLEAR.—You hardly give us enough data to answer your query, and we should like to see one or two negatives. Will you send two up, please? With regard to your print, it is considerably over-toned and too sticky—that is, there are too many bits of unsupported sticks about it, and it would have been better to have taken in the other end of the bridge, by going a little further back. Let us see some more work.

RUFUS.—The yellow stains in No. 1 are certainly due to touching the surface of the print with greasy or hypo-contaminated fingers. In No. 2 the marks look as though caused by contact with metal. Try the following method of procedure:—On taking the prints from the printing frame immerse in a solution of washing soda, 1 oz. to the pint, keep them moving for five minutes, rinse once or twice, and then put in sulphocyanide bath, to which 20 grains of bicarbonate of soda have been added. Be careful to touch the print only by one corner, and see that your hands are clean. Try this, and write again.

A. H. WOOD.—Prints duly received.

AMATEUR. — Landscapes are only admissible if taken in the immediate neighbourhood of your home.

A. W. COOK.—You are wrong; much better use rapid plates and a quicker shutter, but 1-50th of a second would do. When are you going? We intend going up also.

LEARNER CROWLE.—(1) The patches are caused by touching the paper with greasy or hypo-contaminated fingers. (2) Stick to the one you are using. (3) The sulphocyanide is the simplest and easiest to obtain the tones you want. (4) The baths should tone about eighteen cabinets. (5) Any dealer, such as Fallowfield, Adams, Pigott, etc.; see our advertisement pages. (6) Yes, the camera is quite suitable for all-round work.

LANTERN.—(1) Hume's Cantilever would suit you, and these are to be had second-hand sometimes. Your lenses are not suitable for projection, as the loss of light would be enormous; for enlarging they would do. (2) Metol is applicable to every plate and film in the market, and we would suggest potassium carbonate as the best accelerator. (3) The amount of gold deposited on a print is so small that as regards permanency it may be ignored. Thorough fixing and washing is far more important than large quantities of gold.

MUTE.—(1) The heavy orange precipitate in the gold solution should have been well shaken up and added to the other solution, when it would have dissolved. The precipitate in the mixed bath is unavoidable, and is said to be harmless. Your print is over-toned. (2) We should say, abandon the use of the combined bath, and use the sulphocyanide, or else fix your prints separately after the combined bath. (3) Probably the developer is too strong in caustic alkali; why not stick to your old friend pyro, or else, if you want a new developer, try metol and potash, as recommended a week or so back? Give up your quinol developer altogether.

F. O. PICKARD —Many thanks; we will use next week.

H. S. W. E.—Celluloid will get you out of your difficulty. But with glass there should be no difficulty, provided you clean your glass thoroughly, dry it, and then rub it over with a little almond oil, and wipe nearly clean again. The print should be squeegeed down whilst wet, as it comes from the washing water. With regard to your suggestion, *re* monthly competition prints, we will try and include. This month quarter-platee take 1st and 3rd places.

E R. H.—(1) Set your camera up on a table, place the negative in the dark slide, and put the slide in the camera, draw both shutters, arrange your lantern so that the circle of light just covers the negative, focus in the usual way, and expose. (2) It is quite possible that your lens is not corrected for the chemical rays, as I would, therefore, be unsuitable for a hand camera, and the focus is very short, only 3 in. (3) One of the best is—

Chloroplatinite of potash	...	...	1 gr.
Acid phosphate of potash	...	...	60 "
Oxalate of potash	...	...	100 "
Water	...	...	4 oz.

REG. H. N. ELLISS.—(1) If the sodium sulphite is to be used in the form of a stock solution to preserve the pyro then it should be acidified, and for this sulphurous acid is the best; if the pyro is dissolved at the time of ueing there is no need to acidify. (2) No, ammonium bromide cannot be used with a sulphite and soda developer, as ammonia is set free. (3) The ratio marked on the stops should be the ratio of the working apertures. Are you sure it is not so? Obtain the true equivalent focus, and then let us know. (4) The meter is all right; you are not using it right. We will take your data and find the exposure. Ilford ordinary, April, 5 p.m. sun. Set the smallest red circle arrow to O and IM; by the date table we find 3 is the correct number; then we set the black circle arrow to 3, the red circle to diaphragm *f*/32, and read off open landscape between three and four seconds. How did you get your 32?

POSITIVE.—The process is still the same, viz., the wet plate process. Glass is coated with positive collodion, sensitised in a silver bath, exposed and developed with a ferrous sulphate developer. We shall shortly have a set of articles on the subject.

R. H. MICHIE.—We shall be glad to have article and prints, and we would choose from the latter to reproduce. With regard to your negative, we should say, proceed as you suggest with retouching medium, but use Payne's neutral medium to stop out, and do it by stippling. The denser the negative the more brilliant the light it can be printed in, but actual sunlight is rarely necessary, and should be rarely used.

E. B. WAIN.—We are just off to Plymouth, but will write you next week. Your idea of half-holidays is good, and we will adopt.

FISHER LAD.—If the focus of your lens is 12 in., it works at *f*/5. To cut the stops to compare with standard numbers, 2 in. aperture will be *f*/6; 1½ in. will be *f*/8; 1 1-11th in. will he *f*/11; ¾ in. will be *f*/16. The stops should be placed between the combinations at the place of the fixed stop, and never in front of the lens. To find the difference in exposures, square your stop numbers thus: 5×5=25, 6×6=36, etc. The exposures will be as 25 : 36, etc.

F. CARTER.—We should be inclined to get the 4 in. as possibly the more useful.

Sale and Exchange.

RULES.

CHARGE.—*Twelve words or less for Fourpence, Every additional three words, one penny. The name and address of the sender must be paid for. (A single figure, or group of figures undivided by letter, space, stop, or words, counts as one word; compound words count as two words.)*

DEPOSITS.—*Money for goods forwarded on approval may be deposited with the Publishers of the* AMATEUR PHOTOGRAPHER, *who will hold the amounts deposited until they are satisfied that the transaction has been completed to the satisfaction of buyer and seller.*

COMMISSION.—*A charge of 2½ per cent. will be deducted from all deposits whether a sale is effected or not. Minimum charge 1s.*

PAYMENT.—*All payments are to be by cheques or Postal Orders, made payable to Hazell, Watson, and Viney, Ld., 1, Creed Lane, London, E.C.*

PAYMENTS *should be made in Postal Orders or Postage Stamps.*

CARRIAGE *must be paid on all apparatus sent for report, and they will be returned carriage forward.*

ADVERTISEMENTS *can be inserted under a number, the name and address being registered, and letters forwarded for a fee of 3d. to cover postage.*

ADDRESS.—*All advertisements (which can be received up to Tuesday mid-day) and other communications having reference to the Sale and Exchange column, must be addressed "Sale and Exchange,* AMATEUR PHOTOGRAPHER, *1, Creed Lane, London, E.C."*

REPORTING.—*Apparatus may be sent to the* EDITOR, AMATEUR PHOTOGRAPHER, *1, Creed Lane, London, E.C., who will report upon the apparatus to the buyer for a minimum fee of 2s. 6d., or a commission of 2½ per cent., upon the sale price of the apparatus.*

Backgrounds.—Four capital scenic backgrounds (new), flatted oil, on canvas, 8 ft. by 7 ft., 22s. 6d. each. —A. Skinuer, Photographer, Teddington.

Cameras, etc.—Lancaster's half-plate Instantograph, two double slides, tripod, £4 5s.—L. Oldfield, All Saints' Vicarage, Stamford.

Lancaster's quarter-plate Le Meritoire, four slides, rebounding shutter, equal to new, cost 50s., price 39s. —Cave, Chemist, Southport.

Shew's quarter-plate Eclipse, brass bound, rising front, three double backs, Eastman roller slide, screw plates, bottom board, and focussing screen for time exposures, very complete and in excellent condition, cost £10, sell for £5.—No. 416, office of this paper, 1, Creed Lane, London, E.C.

Cameras, Lenses, etc.—Quarter-plate mahogany camera, double dark slide, instantaneous lens, bargain, 22s.; approval. Write, Zoka, 498, Harrow Road, W.

Lancaster's special brass-bound Instantograph, quarter-plate, complete with lens, See-saw shutter, one mahogany and six Tyler's metal slides, improved top to stand, warranted first-class condition, price 50s.; no approval.—Sharland, Santos Road, Wandsworth.

Lancaster's half-plate lens and shutter, 16s. 6d.; three half double Instantograph dark slides, 6s. 9d. each; three-fold stand 9s. 6d.; approval; will exchange for cushion safety bicycle. — Adams, Hermitage Mews, South Tottenham.

Dark Slides.—Six Tyler's metal dark slides with adapter to fit Lancaster's quarter-plate Instantograph, in good condition, 10s.; Lancaster's quarter-plate

instantaneous lens and See-saw shutter, new, 15s.; no approval.—R. Sharland, 73, Santos Road, Wandsworth, London.

Six Tylar's quarter metal slides, new, 9s. 6d., free. —Jno. Wood, Caistor, Lincolnshire.

Enlarging Apparatus—Lancaster's Multum-in-Parvo enlarging camera, 12 by 10, unused; also Griffith's 23s. 6d. hand-camera, quarter-plate. What offers cash?—S. M. Hamilton, 58, Dawson Street, Dublin.

Lancaster enlarging lantern, quarter-plate, 5 in. condenser, very good condition, take £2 15s.; on approval.—Fortescue, Bedford.

Exposure Meter.—Exchange Watkin's exposure meter complete, first issue cost 12s. 6d., for half-plate double dark slides, wood or metal.—Rev. Irwin, Thornbury, Glos.

Hand-cameras, etc.—Frank's Guinea Presto, quite new, 15s.; also Lancaster's quarter-plate combination rectigraph lens, good condition, 20s., cost 30s.—Vicar, Hushall, Scole.

Hand-camera, Diamond No. 2, holds 12 quarter-plates, good lens, view finder. 20s., cost 55s.—W. J. Pink, 2, Carlisle Terrace, Old Road, Gravesend.

For sale, Stereoscopic hand-camera with two rapid rectilinear lenses, fast and slow shutter, holders for 30 films, changed automatically, price £5 10s.—J. C. A., 19, Colby Road, Upper Norwood.

Kodak, No. 3 Regular, new, 100 exposures, 45 used, cost £8 10s., price £6.—J. T. Hunt, Bayview, Dungarvan, County Waterford.

Chadwick practical hand and stand camera, Kershaw shutter, R.R. lens with focussing index, rotating stops, finder, six dark slides, only used three or four times, cheap.—H. L., 26, Lozells Road, Birmingham.

A new Facile hand-camera, with R.R. lens, £4, perfect; 8½ by 6½ R.R. lens by Dallmeyer, £4 10s.; good cabinet portrait lens, with Waterhouse stops, 20s.; Stern's vest camera, 12s. 6d.—G. E. Franklin, Rosebank, Rickmansworth.

1891 Talmer hand-camera, 12 plates, rapid rectilinear lens, Taylor and Hobson's finder, perfect condition, £3 3s.—Guthrie, Bonnington, Edinburgh.

A Kodak, cost 26s., complete with spool, also spool of twenty-four exposures, cost 2s. 9d., cash, £1. B Daylight Kodak, cost £3 5s., complete with spool and extra spool of twenty-six exposures, cost 4s. 6d., cash £2 10s. C Kodak, cost £3 5s., complete, with spool and extra spool, 6s. 3d., also leather case, cost 10s., cash £2 18s., or offers.—W. Parker, 96, Westborough, Scarborough.

No. 4 Kodak Junior for 5 by 4 pictures, also glass plate attachment for same, in oolid leather cases, perfectly new, never been used, cost £12 10s., cash £10 complete.—E. P. Brand, Tacket Street, Ipswich.

No. 3 Junior Kodak, about 20 unexposed films, equal new, £5.—Bygrave, 13, Canterbury Road, Brixton, S.W.

Lantern Slides.—50 3¼ in. square for disposal, 20s. the lot, or exchange for photographic articles. Particulars, 12, Nelson Street, Broughton, Manchester.

Lenses, etc.—Dallmeyer's 1B rapid c.-d.-v. lens, Waterhouse stops, cost 6 guineas, take 35s.; no approval; rack and pinion wanting, otherwise perfect; grand bargain.—Pearsall, Head Master, Enville Street Board Schools, Stourbridge.

Half-plate rapid rectilinear lens, best quality, superb definition, movable hood, covers sharp *f*/8, iris diaphragms, 25s., approval.—W. E., 3, The Pavement, Willesden Green, N.W.

Quarter-plate rapid rectilinear, iris, detachable hood, splendid lens, bargain, 21s.—Photo, 10, High Street, Harlesden, N.W.

Optimus 7 by 5 R.R., 39s., new, bargain.—Mr. Hall, 1, Hurst Road, Horsham.

Half-plate extra rapid rectilinear lens, exquisite definition, iris diaphragms, detachable hood, works *f*/8, equals new, 27s. 6d., worth double, bargain; approval.—Photo, 10, High Street, Harlesden, N.W.

Giving up photography. Will sell whole-plate rapid rectilinear lens, 20s.; half-plate, 15s., each; letter only.—Ridge, 1, Williams Place, Keneal Green, London.

Whole-plate or 9 by 7 R.R. lens, iris diaphragms, finest condition, definition perfect, accept £2. Particulars, Iris, 121, Shirland Road, London, W.

Negatives, etc.—Studies of children, instantaneous photos, six professional negatives, 1s. 3d.; forty years' experience, showing requisite density.—Richford, Wells, Norfolk.

Sets.—Instantograph camera, two slides, universal stand, 30s.; Perken Rayment's Optimus 5 by 4 R.R. with Thornton-Pickard time and instantaneous shutter, 35s., good condition; the lot £3.—Page, Virginia Street, Bootle.

Half-plate outfit, Morley's camera, with double back (latest improvements), two lenses (rectilinear and view, both iris diaphragm, splendid definition), finder, tripod, etc., £7. Offers?—79, Hind Street, Poplar, London.

High-class quarter camera, three double slides, latest improvements, in black box, fitted half-plate Taylor and Hobson rectilinear, iris diaphragms, Newman's patent pneumatic regulation shutter, patent walnut three-folding tripod, also finder, new three months ago, perfect, specimen sent, cash £7.—J. K. Smith, Little London, Rawdon, near Leeds.

Washer—Wood's whole-plate washer, nearly new, only used once, cost 13s., take 9s.—Owen, 43, Mount Pleasant, Reading.

WANTED.

Hand-cameras, etc.—Wanted, Lancaster's hand-camera, Rover, No. 2, cheap.—Woodley, Didworthy, Brent, Devon.

Negatives.—Wanted, a few half-plate cloud negatives, Green's preferred.—Paterson, Victoria Crescent, Barnsley.

Prints.—Wanted, prints from developed 7 by 5 Kodak negatives. What offers?—A. P. Head, Middlesbrough.

Sets.—Wanted, Watson's half-plate Acme set without lens or with Wray lens; address with particulars.—H. R. Sowerbutts, Highfield, Ashton, Preston.

It is unnecessary to send an advertisement for the "Sale and Exchange" column for more than one insertion, as the goods are usually disposed of when the first advertisement has appeared.

Bijou Enlarging Lantern.—Patent rectangular or square condensers used by Van der Weyde and other eminent photographers, reduces size nearly half; portable, unique, scientifically constructed, beautifully made, and optically correct.

Bijou Enlarging Lantern is the only perfect enlarger, high-class lenses and workmanship.

Bijou Enlarging Lantern, new design, take negatives all sizes, gives uniform illumination. Every amateur and photographer should poeeess one. Gives universal satisfaction. Enthusiastic testimony everywhere. Prices with or without objectives sent on application. Cheapest and best. Hughes, Breweter House, Mortimer Road, Kingsland, London, N. Before purchasing any lantern get our grandly illustrated Catalogue, a surprise when seen; over 180 choice wood-blocks of the finest and cheapest instruments extant, 6d., postage 3d.

Bargains in Cameras and Sets.—Whole-plate Spanish mahogany camera by Doubtlet (Moorgate Street), back and front extension, rising front, swing and reversing back, leather bellows, fitted Optimus rapid euryscope lens, Waterhouse stops, works *f*/6, Newman's time and instantaneous shutter, three double book-form slides, in solid leather case, and two-fold stand, grand lot, £12 10s.; Whole-plate Lancaster special brass-bound Instantograph, double extension leather bellows, rising front, reversing and swing back, fitted Lancaster's lens, iris stops, shutter, two double book-form slides, and folding stand, £6 17s. 6d.; half-plate patent collapsible camera, double extension leather bellows, rising front, swing and reversing back, wide-angle movement, very light, width when closed 2 in., fitted very fine rapid rectilinear lens, iris stops, three double book-form slides, and three-fold stand with lower sliding joint, bargain, £6 6s.; Lancaster's ½-plate Instantograph, double extension leather bellows, swing back, two double slides, Lancaster's lens and shutter, and folding stand, 60s.; ½-plate Spanish mahogany camera by Middlemiss, double extension, best leather bellows, rising front, reversing and swing back, front and back extension for wide-angle, fitted three double slides, Leviathan rapid rectilinear lens, iris stops, works *f*/8, three-fold sliding tripod and case, as new, £6 5s., worth double; half-plate Optimus rapidograph camera, double extension, best leather bellows, reversing and swing back, rising and falling front, fitted three best double book-form slides, metal division, clips and catches, Laverne's best aluminium rapid rectilinear lens, iris stops, works *f*/8, three-fold ash tripod and case, warranted as new, £7 17s. 6d.; Lancaster's half-plate Instantograph, fitted Lancaster lens, instantaneous shutter, two slides, and folding stand, £3 17s. 6d.; quarter-plate camera by Ross, square, leather bellows, rising and cross front, swing back, reversing, fitted Optimus rapid rectilinear lens Waterhouse stops, three double book-form slides, with patent light-tight joints and catches, in solid leather case, and two-fold stand, grand lot, £6, cost £10 10s.; Lancaster's ¼-plate special brass-bound Instantograph, double extension leather bellows, swing back, etc., three Tylar's medal and one mahogany dark slides, fitted Lancaster lens, iris stops, and see-saw shutter, and folding stand, £2 5s. All above sets guaranteed as described in every detail. On view, City Sale and Exchange, 54, Lime Street, corner Leadenhall Street, City (late Goy's Medium). Second-hand apparatus bought, sold, or taken in exchange. Inspection invited.

Bargains in Hand Cameras.—Optimus Detective hand-camera fitted optimus rapid rectilinear lens, time and instantaneous shutter, two finders, adjustable focus, three double slides, covered leather, £4 7s. 6d.; No. 2 Kodak fitted rapid rectilinear lens, time and instantaneous shutter, carries 100 films, finder, covered leather, in leather case, £3 17s. 6d., cost £7; Adams' Otto hand-camera, fitted landscape lens, time and instantaneous shutter, two finders, carries twelve quarter-plates, covered leather, best condition, 40s.; special Uno hand-camera, good lens, time and instantaneous shutter, two finders, level, carries twelve quarter-plates, covered leather, 12s. 6d.; Half-plate Shew's Eclipse hand-camera, fitted Shew's rapid rectilinear lens, rotating stops, Shew's patent shutter, four double slides, book form, complete in waterproof case, £6 10s.; Talmer's band-camera, fitted rapid rectilinear lens, time and instantaneous shutter, two large finders, carries twelve quarter-plates, bag changing, quite new, £4 5s.; No. 1 Kodak, fitted rapid rectilinear lens, time and instantaneous shutter, carries 100 films, finder, in leather case, 37s. 6d., cost £5 5s.; Talmer hand-camera, landscape lens, rotating stops, two large finders, carries twelve quarter-plates, bag changing, 55s.; King's twin-lens hand-camera, very fine landscape lens, time and instantaneous shutter, full-size finder, automatic changing, carries twelve quarter-plates, perfect condition, 27s. 6d. All above are warranted as described. On view, City Sale and Exchange Rooms, 54, Lime Street, corner of Leadenhall Street, City (late Goy's Medium). Second-hand apparatus bought, sold, or taken in exchange. Inspection invited.

Bargains in Lenses.—Wray's 18 by 16 narrow-angle landscape lens, Waterhouse stops, diameter of lens 3½ in., focus 25 in., condition as new, £4 4s.; Wray's 9 in. wide-angle rectilinear, suitable for whole-plate to 12 by 10, iris stops, quite new, £4 10s.; whole-plate Ross's rapid symmetrical lens, fitted Waterhouse stops, grand definition, covers well, focus 10½ in., good condition, £4 15s.; Underwood's whole-plate rapid rectilinear lens, iris stops, best condition, £2 15s.; Optimus 3B quick-acting portrait lens, fitted Waterhouse stops, works *f*/4, focus 10 in., diameter of lens 3½ in., condition as new £7 12s. 6d.; 8 by 5 Grubb aplanatic doublet lens, fitted Waterhouse stops, works *f*/8, best condition, £3 15s.; Ross's No. 4 portable symmetrical lens, rotating stops, 6 in. focus, quite new, £3 3s.; Optimus 7 by 5 portable symmetrical wide-angle lens, grand definition, rotating stops, as new, 45s.; Optimus 7 by 5 rapid rectilinear lens, Waterhouse stops, works *f*/8, and fitted Optimus plunge shutter, pneumatic release, as new, 60s.; Laverne's 5 by 4 rapid rectilinear detective lens, Waterhouse stops, works *f*/7, finest condition, 17s. 6d.; Wray's 5 by 4 Casket landscape lens, 5, 7½, and 10 in. focus, iris stops, condition as new, £3 15s.; Ross's 4 in. concentric lens, size quarter-plate, iris stops, condition as new, £3 3s.; 5 by 4 rapid rectilinear by Wateon, Holborn, fitted iris stops, works *f*/8, movable hood, as new, 45s. On view, City Sale and Exchange Rooms, 54, Lime Street, corner Leadenhall Street, City. Second-hand apparatus bought, sold, or taken in exchange.

Whole-plate Rapid Rectilinear Lens with Iris diaphragm by Laverne, splendid lens, list price, 60s., will accept 26s.; also a quarter-plate ditto for 14s. 6d., best metal view-finder, cost 5s. 6d., for 2s., and six new half-plate printing-frames for 2s. 6d.; two-fold ash stand, 4s. 6d.—Captain Howard, 43, Farringdon Road, London, E.C.

Quarter-plate Double Extension Camera with rack adjustment, reversing and swing back, double dark slide, good as new, catalogue price, 32s., will accept 13s. 6d.; also quarter-plate view lens for same, 2s. 6d., and two-fold tripod, 3s., half dozen new printing-frames, 2s., set of scales and weights, 1s. 6d., spirit level, 9d., bottle lamp, 1s.—J. Haddrell, Esq., 47, Milsom Road, West Kensington, London.

Half-plate Mahogany Camera with double extension bellows, brass rack-work adjustment, hinged focussing screen, double dark slide, brass clamped and with quarter-plate adapter, reversible and swing back, excellent condition, great bargain, accept 22s. 6d. cash; also Laverne's half-plate rapid rectilinear lens with Waterhouse diaphragms, list price, 32s, accept 13s. 6d.; a three-fold sliding oak tripod very superior for 7s. 6d. Approval on deposit system.—Professor Booty, 20, Church Street, Kensington, London, W.

Half-plate Lens with Iris diaphragm, take 8s. 6d., quarter-plate bellows camera, 8s.; also a Magazine detective camera, carries twelve quarter-plates fitted with time and instantaneous shutter, and two view-finders in perfect order, accept 7s. 6d. cash. Any of these on approval or deposit system.—E. Davies, 153, St. John's Street, Clerkenwell, E.C.

SECOND-HAND CAMERAS AND LENSES, etc. The best place to buy Second-hand Photographic Apparatus is SANDS, HUNTER, & CO., 23, Cranbourn Street, Leicester Square, London, W.C., who only deal in reliable and best quality apparatus. Approval allowed on all goods, with deposit. Cameras and Lenses, by good makers, bought for cash or exchanged, also let out on hire. Send for Catalogue, gratis and post-free. *Please quote this Advertisement.*

IMPORTANT TO AMATEURS.—Developing, Retouching, Printing, Enlarging, etc., etc. Highest-class Work and Moderate Charges. **—WILFRED EMERY, 24, South Street, Baker Street, W.** Full Price List, post free.

The AMATEUR PHOTOGRAPHER

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—Annual Lantern Slide Competition—The Convention—Hand-cameras—Greaves of Rochdale—Walter E. Woodbury—Hove Camera Club Exhibition—Royal Cornwall Polytechnic Society—A Smart Bit of Work—Chicago World's Fair.

Flotsam and Jetsam. By Anchorite.

Letters—Holiday Resorts and Photographic Haunts (Pickard)—Platinum and Gold Toning of Chloride Prints (Macafer).

The Photographic Convention.—Reception by the Mayor—The President's Address—The Exhibits—The Papers: "Recent Developers" (Wall); "Lantern-slide Making (Mitchell); "Artistic Expression with the Hand-camera" (Guardia); "Multiple Films" (Fry).

Articles.—Stereoscopic Photography (Chadwick).

Societies' Notes.

Societies' Fixtures.

Societies' Meetings.—Brixton and Clapham—Hackney—Holborn—N. London.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

United Kingdom	Six Months, 5s. 6d.		Twelve Months,	10s. 10d.	
Postal Union	,, ,,	6s. 6d.	,, ,,	13s. 0d.	
Out of Postal Union	,, ,,	7s. 9d.	,, ,,	15s. 3d.	

TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 50, Landscape.—Latest day, July 17th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, July 28th, 1893.

Our Annual Lantern Slide Competition will, as usual, close on September 30th, and the following are the prizes, classes, etc.:—

Prizes:—Gold, silver, and bronze medals, and certificates in each class. Competitors may enter one or all classes; each set must consist of six slides, and a "lantern-slide portrait" of him or herself. Class 1—Landscape, with or without figures. Class 2—Sea pieces and river scenery. Class 3—Portraiture and figure studies, to include indoor or outdoor pictures. Class 4—Architecture, interior or exterior. Class 5—Instantaneous work. Champion Class—Any subjects, limited to past prize-winners. Note.—Every competitor must send descriptive notes. Past prize-winners will be awarded "Niepce" or progressive medals, *should they win a medal of the same value as that which they have been awarded in past lantern slide competitions.* Past prize-winners of the gold medal are only allowed to compete in the Champion Class, but past winners of silver and bronze medals may compete in the Champion as well as the ordinary class. All slides must be received on or before September 30th, 1893.

Conditions.—The prize slides are to become the property of the proprietors of the Amateur Photographer, and will be available for loan to photographic societies and others on and after October 14th. Early application should be made for them. No slide that has been previously awarded a prize in the Amateur Photographer Lantern Slide Competition, nor a slide from any negative, a print from which has previously taken a prize, can be entered in this competition. The judges shall be at liberty to withhold any award should they think fit. The slides must have the title legibly written on the mount, and must be numbered in accordance with the particulars given on the entry form. The original negatives as well as the lantern slides must be the work of the competitor, who must be a *bona-fide* amateur photographer. Each set of slides must be accompanied with descriptive notes. The slides must be endorsed "Lantern Slide Competition," and sent to Editor, Amateur Photographer, 1, Creed Lane, London, E.C.

We hope that the fact of our having barred past prize-winners of gold medals from competing in any but the champion class and the reduction of the number of slides required, and allowing competitors to enter more than one class, will induce our readers to enter freely.

The Convention is over, and, taking everything into consideration, may be considered to have been a success. The local secretaries worked hard to make it go off well, and if they erred at all it was in trying to cram too much into one excursion.

Hand-cameras were more *en evidence* even than last year, and there were one or two representatives of the photographic press who, not content with one hand-camera, must needs sling three round their necks. Someone was unkind enough to suggest that if the boat on which they travelled down the Dart had been sunk their three cameras would have acted as mill-

stones and sunk them, "and not much loss either." This is a little too bad.

VERY successful were the post-Convention "smokers" after the day's work, when subjects of all sorts, songs, and recitations enlivened the proceedings till the early hours.

GREAVES of Rochdale, to whose case we have previously referred, was sentenced by the Recorder, at the Salford Quarter Sessions on 3rd inst., to five months' imprisonment with hard labour, which we trust will teach him that the sale and exchange columns of various magazines are not to be used for fraudulent purposes.

MR. WALTER E. WOODBURY, the author of "Gelatino-Chloride Printing," has just been appointed the editor of the *Photographic Times* of New York, and with the first issue of this month the paper will be increased to one-third larger and new and important features added, and amongst them a competition. The Convention (U.S.) number will be published on 14th inst., and will be illustrated by a photogravure and a collodio-chloride print. We wish Mr. Woodbury all success in his new post.

WE publish elsewhere the classes and conditions of the Hove Camera Club Exhibition, which will be held at Hove on Sept. 20th and 21st..

WE also publish the particulars of the exhibition of the Royal Cornwall Polytechnic Society, which opens at Falmouth on September 5th.

WE have received a further supply of entry forms for the International Exhibition at Hamburg, and shall be pleased to forward entry forms to any applicant.

WE have received an example of rather a smart bit of work on the part of an amateur, Mr. F. Andrews, at Blackpool. There was a railway accident at Poulton Junction on Saturday, July 1st, and Mr. Andrews took negatives of the scenes at 3.30 a.m., and prints were off at 5 p.m. the same evening, and five half-tone blocks from these prints were used in the *Blackpool Times* on Tuesday morning. A set of the illustrations has been sent us, and they speak well for all concerned.

WE have also received from one of our readers and past prize-winners a photograph of part of the English loan collection of photographs at Chicago World's Fair, and notwithstanding its small size—quarter-plate—it is quite possible to recognize some of the well-known pictures.

Flotsam and Jetsam.

A GLANCE at any of the weekly illustrateds, of which we have such a plentiful supply nowadays, will show what an enormous debt they owe to the camera, and to what an extent they lay it under contribution every week. Take, for instance, the last number of that young but remarkably successful journal the *Sketch*.

WE might almost say that, but for the reproductions of photographs it contains, it could never have come out. True, there are other drawings and sketches—of great merit, some of them—but the photographic element is unmistakably large, and is unsurpassed in interest. The two photographs of the river at Henley, just after the finals of the Grand Challenge and the Diamond Sculls, are admirable pieces of work, full of life and verisimilitude.

BUT perhaps the best thing about them is that they have supplanted the old artificial and unreal pictures drawn from memory, largely, very largely, assisted by the imagination. The camera should certainly for this secure the support of the new school of realists. Accidents such as that which happened when an illustrated journal by mistake published a picture of a meeting prematurely are by it prevented and rendered unnecessary.

YES, decidedly, truth and reality have gained much by the advent of the camera. But truth is not always welcome. A contemporary states that many of the plates which reach some of the weeklies have to be laid aside as "unfit for publication," chiefly because they contain evidence of the great predilection which 'Arry and 'Arriet show for doing their courting in public.

BUT 'Arry and 'Arriet are not the only transgressors in this respect. There have been photographs of recent race meetings which have depicted the gay crowd of both sexes in various attitudes which, to say the least, could not be called picturesque. The camera bids fair to become in effect, if not in name, a kind of *censor morum*.

AS for lovers, if it has betrayed the too demonstrative wooing of 'Arry, it has well served the little god in the case of many others. The pursuit of amateur photography by engaged couples far surpasses the use of that "bicycle made for two" of which we have been hearing so much lately. We would only suggest that the fitness of things seems to require that a stereoscopic camera should be used.

THE advantages of this kind of thing are evident at once Two heads, we have been told from our youth up, are better than one. Therefore better pictures are likely to be secured. Should a figure be required, why, of course, Angelina's dainty form will add grace and beauty to the scene; and how Edwin's susceptible heart will be thrilled when her pretty fingers manipulate the camera, and she herself takes a picture of which he forms part.

BESIDES, since she is not yet his wife, she does not know all the dread possibilities that lie behind the two words "dark-room" and "development." For this reason it appears probable that there will always be a difference between married and single ladies in their opinion upon photography.

Apropos of what has lately been said as to photographing in Epping Forest and Wanstead Park, it is of interest to note that quite another system prevails in the North. There it is recognised that the photographer, whether amateur or professional, is no Vandal—that his very mastery of his art is a sufficient guarantee of his common sense and respectability.

And so, in such an exquisitely beautiful place as Studley Park and Fountains Abbey, the camera can go everywhere. True, the modest sum of one shilling is charged for admission, but that is imposed on everyone. None who go anywhere within fifty miles of Ripon should lose the opportunity of seeing the Marquis of Ripon's beautiful park and perhaps finest and most complete example of what abbey life was in mediæval England that we have left to us. ANCHORITE.

Letters to the Editor.

HOLIDAY RESORTS AND PHOTOGRAPHIC HAUNTS.

SIR,—I notice in your issue of the 23rd June a slight error in the article on North Wales, and I think the writer, Mr. H. S. Forman, will forgive me if I correct him.

The steamer sailing up the Conway river as far as Trefriw does not start from the Llandudno Pier, but from Deganwy, calling at Conway, and then Trefriw. There are two steamers, the *St. George* and the new *St. George*, and they carry about 140 passengers each, so they are but small.

As the river is tidal, they leave Deganwy at a different time each day.

It is a most delightful trip, and should not be missed. I may say that it is no use taking a stand-camera if you intend returning by the steamer, as only a few minutes are allowed at Trefriw, but a hand-camera will be found useful, as the windings of the river offer many opportunities for a snap-shot.—I am, yours, etc.,

F. O. PICKARD.

* * * *

PLATINUM AND GOLD TONING OF CHLORIDE PRINTS.

SIR,—I do not know whether any of your readers have ever tried combining gold and platinum as a toning bath for gelatino-chloride. I tried this myself the other day with great success. The bath I used was as follows:—

	A.	
Sulphocyanide amm.		2½ drms.
Gold chloride ...		3 grs.
Water		16 ozs.
	B.	
Chloroplatinite potassium		1 drm.
Water		2 ozs.
Bath :—		
A		3 ozs.
B		1 drm.

The result is a most beautiful range of tones from brown to purple and black, which I think surpass the ordinary gold tones.

The paper I have been using was Obernetters. I have not had time to try the stability of the bath or the amount of paper it will tone, but I offer it to you that others may do what I cannot.—I am, etc,

A. P. MACAFER.

The Photographic Convention.

THE seventh annual Convention was opened at Plymouth on the 3rd inst., when the members were received by the Mayor, Mr. W. Law, in the Athenæum. The attendance was not so large as at Edinburgh last year. Still, there was a fairly large gathering. Among those from a distance whom his worship had the pleasure of receiving, besides the President, Mr. George Mason, of Glasgow, and Mr. F. Cembrano, the Secretary, were Messrs. A. Pringle, York, Hindley, Guardia, H. M. Smith (Eastman), A. Haddon, Phipps, Lucas, Cornthwaite, and W. Welford, from London; C. H. Bothamley, Taunton; Seaman, Huddersfield; R. L. Kidd (Morgan and Kidd), Richmond; Major Lysaght, Cork; H. Sturmey, Coventry; Keene, Derby; W. Scorer, Havant; while Western followers of the art-science included Colonel Barrington Baker, Mr. R. Hansford Worth, the local secretary; Messrs. W. Gage Tweedy, R. F. Yeo, R. Rugg Monk, S. Weekes, Lethbridge, and G. F. Treleaven. Among the company were a large number of ladies.

The Mayor, who wore his chain of office, tendered a hearty welcome to the Convention, and congratulated the members on the prospect of fine weather. They would, he was sure, find an abundance to delight them in the district, with its wealth and variety of foliage and flowers, hills and dales, woods and moors, tors and rivers, and a sea coast of great beauty. They would, he was sure, feel amply repaid for the long journeys they had undertaken. Of the historic associations of Plymouth and its famous Hoe all had heard, and with Dartmoor at its back, they would find much to interest and to admire, and especially in the neighbourhood of Tavistock and Ivybridge, both of which the Local Committee, he was glad to see, had included in the week's programme. It was a real pleasure to him that the Convention at Plymouth occurred during his mayoralty, and he trusted everything would be as merry as marriage bells. On Thursday the ancient borough, of which the Prince of Wales was steward, would celebrate the wedding of the Duke of York and Princess May, and part of the programme might possess peculiar attractions for visitors from inland towns, as off the Hoe would be presented the site of a burning ship at sea. They also intended to make the day pleasantly memorable by entertaining 20,000 school children and a large number of aged poor. Again, he would say he felt it an honour to receive the Convention in such numbers, and would add the hope that they would be so impressed with the beauty of the place and the heartiness of the people that it would not be long before they came again.

Mr. Bothamley said, in the absence of Mr. George Davison, last year's president, he had two duties to perform. The first was to acknowledge the Mayor's most hearty welcome. Plymouth they all associated with those great sailors which had made England what it is to-day; and they recollected that in Penzance, still further west, was born one of the greatest chemists that ever lived—Sir Humphry Davy—who was associated with Wedgwood in some of the very earliest photographic experiments ever made. It was, however, the feeling of good fellowship so characteristic of photographers that had brought them so far west to enjoy and make pictures from some of the finest scenery the United Kingdom could boast of; and he was sure the local committee would do its best to make their visit pleasant and profitable. His second duty was to introduce to them, as president, Mr. George Mason, a good photographer, an active supporter of the Convention from the very beginning, and a very good fellow.

PRESIDENT'S ADDRESS.

At the Bath Photographic Convention meeting, Mr. Traill Taylor said that, up to that point in the history of the Convention, the presidential chair had been filled consecutively by representatives of the following departments of the art-science, viz., the literary, the scientific, the chemical, the professional, and last year the chair was most ably filled by Mr. Davison, who might, with every confidence, be termed the artistic. And now come we this year to what is known as the commercial element, for you all know that the commerce of photography is what fills up the most of my time and study, and in this phase of the art-science I am most at home. The commerce of photography may seem at first sight the most commonplace and least attractive of all its various branches; but this is not so, for more or less it embraces all, and it will be found to be the most essential element in the whole—it is the leaven that leaveneth the whole lump. Only in so far as any profession is found to be for the general good, so is it essential, and by its claims proving good or bad so will it succeed or fail. All our introductions, experiments, discoveries, and inventions—and their name is legion—are but means to an end, and the end is commercial.

I fancy I can hear the enthusiast exclaim, "Oh, no, that is not so. The glory of discovery is the reward. The love of the work is ample repayment." That's all very well, and I believe that he who says so has perfect confidence in his statement. Yet, "What is it worth?" Is really the point to be solved on the introduction of any new thing? It may seem a very poor platform on which to place the work of the enthusiast and the investigator, embracing as it does years of experiment and labour—that on which is marked "What is it worth?"—but I fear that with but few exceptions it comes down to that at last.

There are exceptions to every rule, and all of us have met the enthusiast who, for the love of the thing, only goes on working untiringly in one groove or another, using both time and money for the advancement of the art-science, anticipating no profit from his labour, the pleasure of overcoming difficulties and the joy of "finding out" being his end and aim. But, even in such a case, what has been discovered, if to spread and flow, it must come to the river of commerce. If one happen to have income enough so as to render his position independent of any thought of repayment, he may sneer at the position herein taken up; but, nevertheless, it is a fact that commerce is the stream into which all the tributaries flow. Looking back to the beginning, we find Niepce straying along the country roads trying to gather stones suitable for his photo-lithographic experiments, his correspondence with the Paris lithographer, and his partnership with Daguerre, all have a commercial leaning. We also find his brother, who, in his own time, was as great a scientific enthusiast as himself, determines to leave his home, and resolves to come to England, feeling sure that it was a better field for the success of his inventions. And have we not the notable cases of Daguerre and of Mr. Fox Talbot protecting their inventions? What for? For a profit, of course!

Whether we agree regarding the position I take up, that the end and aim of all our work tends to commerce, I have no doubt we will be at one on the various items that I intend to touch upon to-night, for they are in their very essence the work of the business. And, first, I would make a few remarks upon the Convention itself and its membership.

Last year was the most successful of all our meetings; but the Convention meetings, since the very start, whether large or small, have ever shown great vitality. Still, the professional has not given

it neither the attention nor the support that I feel it was his duty to do, and that the institution deserves.

The greater part of the success of our meetings is due to the support and enthusiasm of the amateur element, and why should this be? Surely there ought to be some equality of representation. The profession, as a body, is large enough and influential enough to at least treble its present representation; but I fear that it is the spirit that lacks energy and enterprise. At first there was a considerable outcry about the time the meeting was held being unsuitable for many in the profession. To meet this objection, the date has been changed two or three times, I think; this with some little advantage perhaps, but not much.

Taking professional photographers collectively, I feel that if they tried they could make this meeting for themselves the most pleasant and profitable outing of the year. Every one that has been with us knows that this is an honest statement, and, if they would only gather round in numbers, they would find it a gain both in health and business. The lines on which our Convention is run commend themselves, and are better, in my opinion, than those adopted by our American friends. To a great extent the American Convention is a dealers' show, a good enough thing in its way, but the platform upon which we meet is more independent, and the principal business of our gathering is educational and social, the dealers' part being a mere detail, and never interfering with the more salient points for which we meet.

The professional who joins us in this week's outing, by personal contact and general interchange of ideas and experiences alone, is bound to learn more than he would in a hundred times the time spent in less congenial and less favourable circumstances, so that, even as a paying speculation, I look upon the Convention as a profitable investment to any member with his eyes and his ears open. Hence I would that the professionals bestir themselves, and make a fairly representative turn-out. If they but did this, the institution would be, beyond doubt, an assured success for all the coming years—a centre where the representatives of all the various societies might meet in a broad union once a year.

The National Association of Professional Photographers should find the time and places of the Convention a fitting opportunity for their meetings. There they could be in numbers and could easily arrange to hold their own special meetings during the week to suit themselves without in any way interfering with the general arrangements of the Convention.

All being in one town at one time, more meetings could be held, larger audiences could be got, and they would be far more likely to command attendance than where they have to travel, in many cases, long distances for single meetings.

Last year Messrs. Fall, Whitlock, and O'Neill made a move in this direction, and I have no doubt that their endeavours then tended to the growth and influence of the Society. This Association, worked on broad lines, should be a power for good to the whole profession; there are so many questions of importance, such as insurance, copyright, holidays, legal defence, prices, and many other subjects that are of great commercial interest to the whole profession alike.

One thing might here be noted, that the obtaining of a closer union between the individual members of the profession is what should be aimed at if success is to be the result in this as well as all other like institutions; and this is the greatest difficulty to be overcome, for the photographer does not take so kindly to unity as most other professions do.

Here I would say a few words on behalf of the Photographic Benevolent Association. This society should have much more consideration and sympathy from the photographic worker. On investigation, I find that most of the funds and the greater proportion of interest and work is undertaken by the kindly well-wisher, and that don't-care-about-it apathy still belongs to the working photographer. As I have elsewhere said, every *employé* in the photographic trade in the United Kingdom holds a special interest in this society, and half-a-crown a year is all that is necessary to be paid up by any one of them to place themselves in the position of membership, which, in cases of need, gives them the advantage of becoming participators in the funds of the society. About a half-penny per week—just think of it!—and for this fraction, if paid by the body of employers, the income of the society would be raised to £400 a year, and, if the employers also joined, the return shown could not be less than £500, at the very minimum, of our outlay. Look at the power for good this would place in the hands of the Executive. If every employer would interest himself to induce his *employés* so to assist themselves, the feat would be accomplished, for they could not fail to be successful, and thus the many rivulets would swell the greater river.

For the promotion of union in the profession, I think that the institution of the "Central Photographic Club" is no mean factor.

It opens up an avenue of social intercourse and information, and anything of such a nature must help to advance a man in his business; it gives him the opportunity of being up to date, and that is one of the essentials of successful trading.

A place of meeting where, at all times, the country member comes in contact with his compatriots in the city, and where he at once gets into the centre of that which most interests him—and the friends from the provinces will also keep the city members acquainted with what is going on in the country districts—and these advantages are to be obtained at a merely nominal outlay. This institution should have the fullest support of the profession.

The affiliation scheme of the Society of Great Britain is also a march in photographic progress that should help to draw photographic societies together, and, if taken up with a will, must result in an intercourse that is bound to be beneficial to all, the interchange of papers and slides alone being of great moment and importance, especially where societies are too small or too young to be able to produce new subjects or original matter without help from wider fields.

The progress of the year shows steady advancement; nothing startlingly new, but there's not a week passes without the introduction of some ingenious device or discovery which tends to save labour or to perfect results.

It has been stated that there are more patents taken out in connection with photography than in any other trade of like dimensions, and, looking at the continuous stream of applications for protection, it is easy to believe.

Printing-out papers is one phase of photographic work that has made a marked advance in the currency of the year. Gelatino-chloride paper has come into almost universal use, the beauty of the finished results secured by the use of this paper tending greatly to its growing popularity. Collodio-chloride paper has also grown considerably in demand, as it is considered by many to allow of a greater variety of tone, and also that it is more permanent than the gelatino-chloride, but to prove the latter requires the test of time. The new cold-bath process paper introduced by the Platinotype Company has also made a rapid stride to the front, and is now almost universally adopted. The advantage of local development by its use being rendered sure and easy was a great recommendation to its success, and where it has been fairly tested, the hot bath has been laid aside for this more perfected process.

Stereoscopic photography, which, like the sleeping beauty, has been lying dormant for so many years, lives and breathes again. A great advance has been made, and considerable work has been done in this department during this last year, and it still goes on increasing. A big future may be anticipated for it.

The hand-camera competition still runs on without impediment. The originality and ingenuity displayed and expended on the construction of these little instruments is perfectly astonishing, and the excessive number of forms placed upon the market—each professing to be the best—is marvellous. By their results yet shall know them. The work produced by them is to be found broadcast in all sorts and conditions of illustrated papers, photographic and otherwise, ranging from very bad impressions up to charming productions. So much in favour has the hand-camera become, that I have no doubt but that the larger proportion of the apparatus brought for use by the members of the Convention will be found of this description. If the advances during the year have not been made by leaps and bounds, they are at least sure.

In lenses, the Zeiss, the Dallmeyer Tele-photo, and the Ross Concentric are increasing in demand. Isochromatic plates are taking a firmer hold, and the Sandell has been adopted by many.

The journalism devoted to the profession seems to be out of all proportion to the extent of the trade they cater for, but I suppose time will try them, and the weakest will go to the wall.

And now I will leave the various members, in their various classes, during the Convention, to thrash out their various themes, one by one, scientific or chemical, each in his department, be it development, speed, light, colour, or optics, each of them needing its own specialists to do it justice.

I hope you will all spend a happy and enjoyable week.

On the motion of Mr. Martin, supported by Mr. Bothamley, the President was thanked for his able address and the Mayor for his cordial welcome.

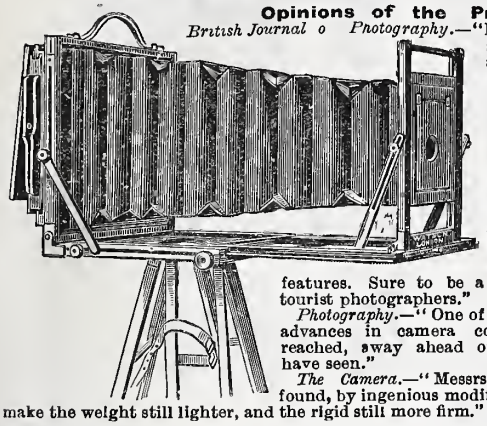
Light refreshments were then served, and the rest of the evening was devoted to the excellent exhibition arranged in the art gallery and to views shown by the optical lantern.

The slides passed through the lantern in turn were the work of Dr. Mitchell, of Philadelphia, Major Lysaght, Messrs. York, Cembrano, Bothamley, Welford, Hindley, Forsham, and Brier.

The exhibits, whilst not very numerous, are decidedly good on the whole. Mr. Hawke, of George Street, Plymouth, shows a series of prints of the Duke of Edinburgh from thirty-one negatives taken in forty-two seconds. W. G. Tweedy shows some capital examples

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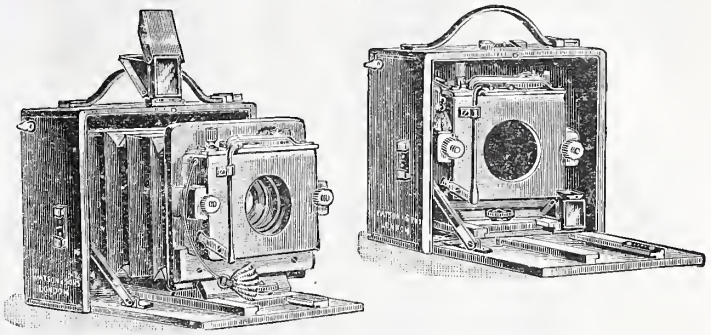
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Exposure Shutter...	1 0 0	1 0 0	1 0 0	Exposure Shutter...	1 0 0	1 0 0	1 0 0
Finder	0 10 6	0 10 6	0 10 6	Finder	0 10 6	0 10 6	0 10 6
Travelling Case ...	0 12 0	0 15 0	1 0 0	Travelling Case ...	0 7 6	0 9 6	0 12 6
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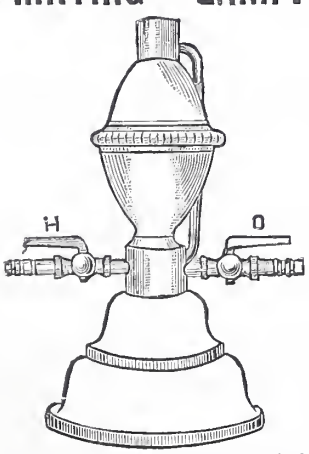
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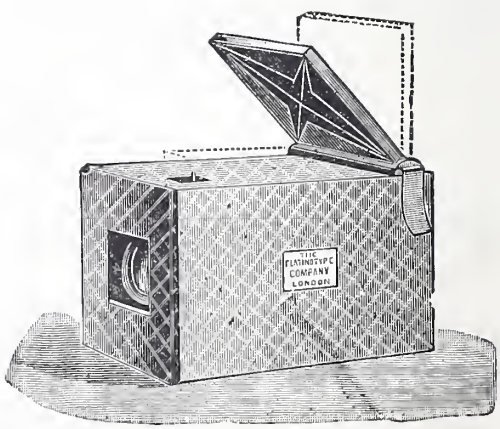
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of panoramic photography. Mr. Yeo shows some of his now well-known child studies, as well as some charmingly coloured prints; and Heath, of Plymouth, has some good work, and a life-size carbon enlargement by Elliott and Son, of Barnet, of H.R.H. the Prince of Wales. Martin and Co., of Southgate, have a good enlargement of their well-known ice crystals.

The Eastman Photographic Materials Company, of 150, Oxford Street West, have an excellent exhibit of prints from Lafayette's negatives on a new paper they are introducing under the title of "NIKKO," which certainly gives charming results. It strikes one as being a very highly-glazed bromide paper, and as very fine sepia tones are to be obtained on it with comparatively easy results, and from the delicate tint of the paper, it is likely to speedily become a favourite. Solio prints were of course exhibited, both enamelled and matt surface, and with pleasing subjects and fine tones bore good testimony of the capabilities of the paper.

O. Sichel and Co., of 52, Bunhill Row, E.C., who are London agents for M. and T. Scott, of Lauderdale Works, have some really very fine enlargements, both in bromide and carbon, the gem being probably a rich carbon enlargement of one of the little Battenberg princes. The same firm are also showing some good quality and tasteful mounts and mouldings, and one frame in Louis XVI. style is exceptionally tasty and striking. A reversible portable background, too, contains one or two novel points which will recommend it, for it can be turned upside down and reversed so as to get different effects to suit different subjects. A studio-camera, with stand of good construction, is also well deserving of notice, as well as a field-camera.

H. Beale, of London Road, Reading, had samples and results of the use of his "Nonactinine," which has already been noticed in our pages.

Geo. Mason and Co., of Glasgow, showed several useful pieces of apparatus and photographic necessaries, notable amongst the same being a tripod securer to prevent the slipping of the legs.

Elliott and Son, of High Barnet, had some capital examples of work on their well-known plates, most of them being also printed in carbon, for which they have such a name.

Benthall and Co., of 13, Victoria Street, S.W., showed their stand both open and closed; this we have already noticed on p. 389 of our issue of June 9th.

Geo. Houghton and Son, of 89, High Holborn, showed their well-known Shuttle hand-camera and examples of work done by it, and also the Telephoto lens and examples by the same.

W. Scorer, of North Street, Havant, had two large prints, 36 by 20, taken with his ingenious camera with double eccentric fronts.

Mr. H. Micklewood, of Victoria Terrace, Plymouth, showed results obtained with his cloud shutter.

R. W. Thomas and Co., of Pall Mall, showed some very fine prints from negatives on their Sandell plates, all of very fine technique and speaking well for the possibilities of the plate

Messrs. Morgan and Kidd, of Richmond, filled one wall with examples of bromide and carbon enlarging, one bromide being eight feet long. They also have some excellent collotype prints of great variety of colour.

Schwarz and Co., of 9, New Broad Street, had a good show of the new developers, amidol, metol, and glycin, both in bulk and cartridge form, as well as all Dr. Andresen's chemicals.

Fuerst Bros., of 17, Philpot Lane, E.C., also show the new developers, with examples of work done by the same.

Taylor, Taylor, and Hobson, of Leicester, showed their standard flanges which have proved so useful and easy in practice. These attracted considerable attention.

Adams and Co., of 126, Charing Cross Road, showed a new form of the Adams' hand-camera with swing back and rising front, in which plates and films or both could be used. The front of the finders are detachable, so that they can be cleaned. The twin-lens Ideal, fitted with Wray lenses and rising front, was also on exhibition.

On Tuesday, 4th inst., an excursion was made by steamer up the Yealm and Tamar, but a thunderstorm and continuous rain completely spoiled the day from a photographic point of view.

On Wednesday, 5th inst., the general meeting was held, and the invitation of the Phot. Soc. of Ireland to visit Dublin in 1894 was accepted.

The President then asked the meeting to accord a very hearty vote of thanks to the Mayor of Plymouth for his most generous reception of the Convention, to the Plymouth Institution for the loan of their premises, to the Local Committee for all they had done to make the meeting pleasant, and to the leaders of the excursions. If Tuesday's excursion might be taken as a sample, then they had a store of interest and beauty to come. Of course the weather could not be commanded, but in spite of thunder and lightning and the torrents of rain, all managed to enjoy themselves, and the little sing-song in the saloon was by no means the least enjoyable feature.

A cordial vote of thanks was given to Mr. Cembrano, the Hon. Sec., and

Mr. C. H. Bothamley, in proposing it, said the prospects of the Convention had never been so bright, and that was due largely to the efforts and tact of their Hon. Secretary.

Mr. Cembrano, in reply, said with this meeting his first year's service came to an end, and he was pleased to say that for the first time in the history of the Convention there was a balance on the right side. It amounted to £15 19s. 9d., and next year he hoped it would be doubled, although the number of members was certainly a good deal less. So far he had received subscriptions from 173, which was a good deal more than he expected, considering the great attractions in other parts of the country this week.

Messrs. John Howson and Webber were elected auditors.

The following motion, submitted by Messrs. H. Snowdon Ward and E. J. Wall, was recommended by the council for adoption:—"Resolved, that the Photographic Convention of the United Kingdom acknowledges the courtesy of the Photographers' Association of America in inviting British photographers to attend its Conference this year as honorary members, and this Convention wishes its Committee to add to its rules one to the following effect:—That all members of the Photographers' Association of America be considered honorary members of the Photographic Convention of the United Kingdom, and if travelling in the United Kingdom at the time of the Convention, are invited to take part in its proceedings."

Mr. Wall, in proposing the adoption of the motion, regarded it as a first step towards a Photographic International Union.

The Hon. Secretary seconded the motion, remarking that he had received courteous and encouraging messages from the Photographers' Association of America.

The motion was carried unanimously.

The following delegates were reported as having signed the attendance book:—Field Club, T. Guardia, S. H. Fry; Richmond Camera Club, R. L. Kidd, P. Ennis; North London, J. Traill Taylor; Leicester, J. Porritt; Munster, Major Lysaght; Manchester, J. Brier and Woodward; Tooting, L. E. Morgan; London and Provincial, W. D. Welford and S. H. Fry; Photographic Society of Ireland, A. Werner; Glasgow and West of Scotland, G. Mason.

At a general committee, which followed, the Council were, on the motion of Mr. Werner, seconded by Mr. H. M. Smith, elected as follows:—

F. A. Bridge, Dalston; J. J. Briginshaw, London; C. H. Bothamley, Taunton; A. A. Carnell, Plymouth; A. Cowan, Southgate; J. P. Gibson, Hexham; M. J. Harding, Shrewsbury; H. M. Hastings, West Kensington; H. L. Henderson, T. C. Hepworth, Holborn; R. Keene, Derby; J. A. King, Bath; W. Lang, jun., Glasgow; P. Lange, Liverpool; A. Levy, London; C. P. R. Lucas, Kent; A. Mackie, London; W. W. Naunton, Shrewsbury; J. Porritt, Leicester; A. Pringle, Bexley Heath; B. J. Sayce, Liverpool; A. Seaman, Chesterfield; H. M. Smith, Stroud Green; J. Stuart, Glasgow; H. Sturmey, Coventry; J. Traill Taylor, London; A. Tate, Belfast; L. Warnerke, G. W. Webster, Chester; J. B. B. Wellington, Harrow; A. Werner, Dublin; R. H. Worth, Plymouth; F. P. Cembrano, Richmond (Hon. Sec.); E. Appleby, Bath; J. L. Lyell, J. G. Humphrey, London; J. Fergus, Largs; W. Taylor, Leicester; R. L. Kidd, Richmond; T. Mayne, Dublin; and Major Lysaght, Queenstown.

At noon the official Convention group was taken in the Guildhall Square by Mr. Heath, of George Street, Plymouth; Mr. Scorer, of Havant, also took a group on a plate 28 by 20.

Reassembling in the Athenæum at three p.m. the serious business of the meeting was begun, Mr. E. J. Wall reading his paper on—

RECENT DEVELOPERS.

A writer in one of the journals lately said, "On what grounds and to what purpose this eternal puff of the most recent? Is there a 'fashion' in photography that we must all betake ourselves to the last *haute noveaute* or proclaim ourselves slovens? Amidol! Metol! Glycin! These are 'the only wear,' and the old clothes are gone to the ragman! But suppose that the old should be better?" I think possibly in the last sentence we may find the reason why we have "this eternal puff"—or I would rather say this eternal experimenting with new things. I take it that there is a general feeling of a desire for progress, whether in technique or art, and that to this desire we must put down the craze for the last new developer, the latest lens, and the latest printing process. If some such healthy feeling did not exist, photography would not have made the progress it has done in the last fifty years.

To our professional brethren, who when working in the studio may be said to work practically under given conditions, not the least of which is to turn out good work which shall remunerate him suitably for his skill, his time and outlay, there is possibly not so much temptation to experiment, especially when experimenting may mean increased expense without any increase of revenue; but to the amateur, to whom expense is possibly not so much an object, and who firmly believes that he may yet discover a panacea for all

ills of under or over exposure, or careless or ignorant working, there is a very strong temptation to exchange "old lamps for new."

One of the subjects which has claimed no small amount of attention since our last happy meeting in Edinburgh, is that of the new developing agents—Amidol, Metol, and Glycin—and I propose to summarise the results of a few experiments which I have made.

The number tablet of Warnerke's sensitometer was used as a convenient subject to expose with. The light chosen was a Welsbach or incandescent gas burner, the supply of gas being passed through two governors to regulate as far as possible the supply. Commercial plates marked with one batch number and one speed number, were bought and exposed one after the other as quickly as possible, and then treated with the various developers.

Mr. Bothamley's standard pyro-soda developer was used for the pyro to obtain a standard. The other developers were modified to try what was the effect of modifying the proportion of the constituents of the various chemicals.

Amidol is a salt of diamidophenol, and is fairly soluble in water, forming a slightly acid solution. It is far more soluble in solution of sodium sulphite, and with a saturated solution it is possible to get as much as 16 gr. of Amidol dissolved in every ounce.

The distinctive feature of Amidol is that it forms a very energetic developer in conjunction with sulphite without the addition of an alkali, and for this reason alone I think it is worthy of consideration as obviating any chance of frilling, which was not unknown with eikonogen and hydroquinone when used with caustic alkalis.

The first method of using this developer, suggested by the makers, was to prepare a stock solution of sulphite and Amidol, and dilute as required. Such a solution, however, has, I think, given rise to some of the curious contradictory statements we have heard about this developer, but it is now generally accepted that keeping it in this form is certainly not the best way of using it, and I have here a negative which fully bears out this idea. A plate exposed in a studio was cut in two, and part developed with a freshly made solution, the other part developed with a similar solution three weeks old. The difference is so striking as to need no comment to those who see it, the one part, that developed with fresh solution is dense ; the other, developed with old solution, a veritable ghost. As Amidol is readily soluble in water or sodium sulphite there is not the slightest difficulty about making a solution up as required.

Coming now to practical tests, I have tried the addition of varying quantities of sulphite, Amidol, and bromide, and I will summarise the results I have obtained.

The normal developer used was Amidol 1, sulphite 10, water 100. In this the image appeared in 10 sec., and development was complete in 5 min. Increase of sulphite in the proportion of 15, 20, 30 merely reduced the time before the appearance of the image and the time of development, but when over 20 parts of sulphite were used the plates fogged very quickly. Increase of Amidol also accelerates the appearance of the image and enables one to obtain density very readily ; and I may here state that with some plates I have tried, the Amidol has to be increased to the extent of 10 to 15 gr. per oz. before sufficient printing density could be obtained. Dilution of the developer with water delayed the appearance of the image, and tended to thinness of image, though this, of course, can be compensated for by developing longer.

The addition of bromide in small quantities, that is, up to about 1 gr. per oz. of developer, seemed to have little or no influence, but in larger quantities to the extent of 8, 16, and 20 gr. per oz., the appearance of the image was enormously delayed, and notwithstanding a development protracted to over six hours, neither density nor as many numbers could be brought out. So far I think that a more certain and reliable restrainer will be found in the use of a weak acid such as citric or acetic.

The influence of the temperature of the developer was tried as follows: A developer was cooled by means of ice till it registered 35 deg. Fahr. In this the image appeared in ten minutes, and took one and a half hours to gain anything like reasonable density, and was then finally too thin. A developer of the same constitution was heated to 70 deg. Fahr., and the image appeared almost the instant the developer touched the plate, and development was finished in two minutes, the plate being slightly fogged.

I have here two negatives developed with Amidol, kindly made for me by Mr. Beckett, of Hackney, as examples of ordinary studio work, and he says that negatives developed with Amidol or Metol do not require so much retouching as pyro-developed negatives, and as he does the best part of his own work he ought to know. I hand these round specially for the benefit of our professional brethren.

Finally it has been said that plates for development with Amidol require less exposure than for pyro. This I cannot believe, I have made a series of very careful tests cutting exposures down, and I have not found that Amidol will fetch more out of the plate, it will not fetch out what is not there, but what it will do is to flash the image up and give far softer results, which are more amenable to after-treatment than the harsh negatives so often yielded by pyro with under-exposed plates.

It has also been recommended to use Amidol in conjunction with metabisulphite of potash and an alkali. So far my experiments have only enabled me to obtain a filthy mess of a developer and magnificent examples of dichroic fog, but I intend to try it with other plates, because all plates do not require or stand exactly the same method of working.

It seems to me to be absurd to suggest the use of an alkali when we can get such excellent results without it, but Dr. Stolze suggests keeping a stock solution of Amidol and metabisulphite, and then at the moment of using neutralising with bicarbonate, not carbonate, of potash, but so far I have not been able to obtain better results with this than by dissolving the Amidol in plain sulphite just before use.

Metol is the sulphate of methylparamidometacresol, and is a glistening powder of faint buff tinge. It is soluble in water to the extent of 2½ parts—100 of water. In solution with sulphite it forms a colourless solution, which keeps its developing power, so far as I can see unchanged, thus having the advantage of Amidol in this respect. Like Amidol, it develops without the addition of alkali when used with sulphite, but the images are extremely thin and weak. The alkaline carbonates of potassium and sodium may be used, and of the two potash gives a quicker developer and rather more density, soda having a tendancy to a slower development and softer results. Bromides act in small quantities merely by delaying the appearance of the image and prolonging development. I developed some plates with 8 to 16 gr. of bromide to the ounce of developer, and with the latter quantity the image was twenty minutes in making its appearance, and after six hours' development only four numbers were rendered visible. In small quantities, however, bromides seem to have far less action than with pyro and some of the other developers.

A normal developer may be considered to be one containing metol 3 gr., sodium sulphite 30 gr., carbonate of potash or carbonate of soda 15 gr. to every ounce. If distilled water be used there is no necessity to use so much sulphite, and I have not been able to detect that the omission of the sulphite has any ill effect on development beyond a slight tinge given to the gelatine. Increase of the alkali tends to produce harder results, that is, the higher lights are denser than the lower. Dilution with water produces greater softness whilst increase of metol causes again greater density.

Testing as to the influence of temperature I found that at 35 degs. F. development was unduly protracted and only thin images obtained, but in no case could I get a lower number, whilst heating the developer caused fog. I again tried with metol to see whether it brought out more than pyro, or in other words whether it permitted of a reduction of exposure, and I am compelled to say that my results were distinctly contradictory to this statement. The main advantage of these two new developers is that within reasonable limits, in fact I do not think I should be far out if I said it was impossible to obtain that hardness which is so easy to obtain with pyro and slight under-exposure.

Glycin is oxyphenylglycin, and is a pinky-salmon powder, smelling strongly of carbolic acid, not very soluble in water, and more soluble in sulphite solution or an alkali, when it forms a colourless solution which seems to keep well as a normal developer. I have used Glycin, 5 gr.; carbonate of potash, 25 gr.; water, 1 oz. ; and find that diluted with water or addition of bromide gives far more transparent negatives. It is characteristic of Glycin that it requires no addition of bromide in order to give negatives absolutely free from fog under conditions and with plates that with Amidol, Metol, and pyro invariably gave fog. It is in its action, I think, more like ferrous oxalate than any other developer, and should be useful for black and white work, and I have used it for this purpose with excellent results. I have not used it so much as Metol and Amidol, but am inclined to think it is less useful for landscape and portrait work than the others, though for plates over-exposed in the field, I have obtained some capital results by using a very weak Glycin developer, in the proportion of Glycin, 1½ gr.; potash carbonate, 12 gr. to the oz., and allowing plenty of time for development.

Of these three new developers, I think the one that will find most favour is Metol, because it is more akin to the older developers, in that it is used in two solutions with an alkali. All of them are applicable to bromide paper and transparency work, but I must confess that so far my use of them for this purpose has been so small that I am loth to say anything about them.

Within the last two months, yet another developer, Reducin, has been announced, which, like Amidol, requires no alkali, and it is quite possible that we are by no means at the end of our list yet, and that thanks to the energy and researches of our German friends we may be blessed with still more tools to play with.

I have, of course, condensed my remarks, and I have not brought down any experimental plates, though I had intended to do so, but I thought it would hardly interest you to look through between 150 and 200 negatives. Nor have I in any case tried for what Messrs

Hurter and Driffield have defined as a perfect negative. I have tried these developers from the same standpoint as a man in practice would use them, but I hope I have said sufficient to prove that it is worth while giving the new comers a fair trial, even if it is not found that they will oust our dirty old friend pyro.

Since the above was written Messrs. A. and L. Lumière's paper read before the Société Francaise, on June 2nd, has been published, and I briefly summarise it. They suggest the use of the oxalate of diamidophenol as preferable to the chlorhydrate which is one of the commercial forms of Amidol, and the oxalate is formed by them by double decomposition of potassium oxalate and chlorhydrate of diamidophenol. The one is, of course, well known to you all, and the latter is Amidol-Hauff; 20 parts of this dissolved in 200 parts of water and mixed with 19 parts of oxalate of potash dissolved in 200 parts of water gives a solution containing 21·5 parts of oxalate of diamidophenol. This salt is sparingly soluble in water 1 in 2,000, but far more soluble in sodium sulphite solution, and by means of this it is possible to get a concentrated solution. A 2 per cent. solution of sulphite will dissolve 1½ per cent. of oxalate of diamidophenol, a 5 per cent. sulphite solution dissolves 3 per cent., a 10 per cent. 5½ per cent., and a saturated solution 7 per cent.

Messrs. Lumière state that increase of the strength of the diamidophenol above 3 per cent. gives no increase of energy of the developer. A very few drops of 10 per cent. solution of ammonia accelerates very much without giving any fog, but that with larger quantities of ammonia a general black fog is produced. A few drops of 10 per cent. solution of acetic acid is the best restrainer, small traces of bromide having but little effect.

Finally they suggest the following formula for instantaneous work :—

Oxalate of diamidophenol	...	...	...	5 parts.
Anhydrous sodium sulphite	...	...	30 to 40	„
Distilled water	...	...	... 1,000	„

For time exposures reduce the quantity of sulphite to 10 to 20 parts.

The advantages of the oxalate salt are that both in the solid and liquid state it is more stable; considerably less sulphite is required, which, from an economical point of view, is not to be despised; and finally, it will not stain the skin.

I only received the number of the *Bulletin* containing this paper last Tuesday, and have not therefore had much opportunity of doing more than try the method suggested by Messrs. Lumière, but I have tried it both with Amidol-Hauff and Amidol-Andresen, and find it certainly workable, and I think it will prove to be in practice an advantage, and for those who would like to try it I suggest the following rough and ready formula :—

Dissolve 20 grains of Amidol in ½ oz. of distilled water, add 80 minims of the normal 1 in 4 oxalate solution as used for ferrous oxalate developer, then add from 1 to 2 oz. of 1 : 3 solution of sodium sulphite, decant or filter from any precipitate, and the developer is made.

I had hoped to have been able also to make some mention of the method of developing plates with gelatino-silver emulsions, as suggested by Dr. Jenney, which has appeared in several photographic journals during this last month; but whilst I have only just had time to concoct the awful mixtures suggested, and try them for about a dozen plates, I am unable to say anything for or against, because of such few experiments; but it is certainly a promising field for experimentalists, and the process may prove yet another valuable assistant in practical work for obtaining pictures.

In the discussion which followed, Mr. L. E. Morgan said his experience was that if with amidol the best results were wished for, the exposure should be, say, one-half that which would be given if pyro was the developer. Mr. Birt Acres believed that by humoring pyro quite as soft results could be obtained as with the new developers. For a very quick exposure on a waterfall he began with an eighth of a grain of pyro. The new developers were not yet well understood. Mr. Leblanc's experience with the new developers led him to suggest more stopping down. Mr. Cembrano was certain that with pyro and soda he could obtain as soft and as good results as with any of the new developers. Dr. Mitchell, of Philadelphia, found that whilst with the new developers the image flashed up quickly, it was not so easy to get density as with pyro. The new developers had very strong reducing power, but at present it was like chaining lightning. Mr. Mowl favoured eikonogen. Mr. Sturmey, in developing about 200 of a rather slow make of film, had secured most satisfactory results by adding an equal quantity of amidol to a 10 per cent. solution of pyro. By that means he got good colour and full detail. Mr. Henderson believed with regard to the new developers they were simply working in the dark. In his work he found good result from mixing hydroquinone and eikonogen. Mr. Wall, in acknowledging a vote of thanks, said whilst in case of an under-exposed plate it required a good deal of experience and training to obtain a soft negative, anyone could get a soft result with the new developers, and that with regard to the statement that less exposure was required for these new developers, he would point out that in making camera tests there was absolutely no basis of measurement, and that he could not accept any such statement as correct after his experiments.

Dr Mitchell, of Philadelphia, then read his paper on

LANTERN-SLIDE MAKING.

THE preparation of lantern-slides is a subject upon which so much has been both said and written within the past few years, that it would seem almost impossible to say anything new. And yet, notwithstanding this, the number of really *good* lantern-slides made bears but a small proportion to the entire amount produced, or to the large quantities of plates, etc., used for their preparation. So that it seems, perhaps, after all, something might be still said on such a trite and commonplace subject. Having, during the past few years, occupied much of my time in lantern-slide making, I have acquired considerable familiarity with the different methods usually employed in America, and also made some modifications of my own, so that, while not pretending, in the limits of the present paper, to give a complete *resume* of the subject, it may be of interest if I detail, in a general way, the methods mostly in use by American lantern-slide makers.

The vast majority of lantern-slides made in America by amateurs are prepared from gelatine plates, collodion emulsion being very little used, and wet collodion being employed by but few outside the regular commercial slide manufacturers. Perhaps this may be partly explained by a prevailing fondness for the black and grey tones, so easily obtained with gelatino-bromide emulsions. There is, however, a rapidly growing taste for warmer tints in brown, and even sepia, or Bartolozzi red. Quite a number of different brands of lantern-slide plates are found in our market, and of varied excellence. Of these, those prepared by the Eastman Company are probably the most popular. I have always used gelatine dry plates for preparing my own slides, and I am a firm believer that, all things being equal, it is quite possible to prepare as good, if not, perhaps, even a better slide upon a gelatine plate than can be obtained by any other procedure, while its convenience and readiness for immediate use render it much to be preferred.

The size of the American lantern-slide plate is always 3¼ by 4 in., thus differing from the English size, which is usually square, and 3¼ by 3¼ in. We in America think the oblong shape the best, as it allows of a rather larger picture, gives ample room for the label, and also for taking hold of the slide when placing it in the lantern. We can hardly expect in a country like England, where customs are firmly established, that a change of size would readily be adopted. And yet it is highly desirable, in view of the growing interchange of slides between not only England and America, but also with other countries, that some one standard and uniform size for all should be adopted. The present difference often leads to considerable annoyance on account of fitting the varying sizes into the carriers generally used for the lantern. This difficulty is less in America, however, than in England, for it is always easier to put a small slide into a large carrier than it is a large slide into a small carrier. I notice, indeed, that one English photographic periodical has announced that in future it will receive no slides for competition unless made of the uniform size of 3¼ by 3¼ in. This is much to be regretted, for it would seem possible in such cases to use an ordinary "push through" carrier, and I hope the example will not prove contagious, for it will tend to check these international exchanges and competitions, and prevent many on each side of the water from becoming acquainted with the best examples of well-known workers,

In the preparation of lantern slides I believe that the majority of our best workers in America prepare their slides by reduction in the camera. I have been informed that in England the reverse is true, the larger number being prepared by contact. I think this difference may partly be ascribed to the fact that the sizes of negatives adapted for contact printing (3¼ by 3¼ and 3¼ by 4¼ in.) are not as popular in America as they are in England. We do not use the 3¼ by 3¼ size at all, and for all small work the most popular size is 4 by 5 in. This does not lend itself so well for contact work, and hence the reducing camera is more frequently brought into requisition. My own preference is unquestionably for reduction by the camera, even when preparing slides from small negatives. There seems to be a certain quality gained which is sometimes missing in contact work, and, in addition, the process affords many facilities for shading or vignetting different parts of the negative which may need either holding back or prolonged exposure.

The character of the light used is also another prime factor. In my own experience I use two different lights—a south light, where full sunlight falls directly upon a ground glass window; and a north light, where the window is of clear glass and at an angle of about

45 degs. to the horizon, thns securing an even, soft illumination all over the negative. I use one or the other of these lights, according to the character of the negative, as will be detailed later.

Retnrning again to the subject of lantern-slide plates, I may say that I do not believe it possible, when nsing all varieties of negatives, dense or thin, to obtain uniform excellence with one grade of plate. Tbis wonld stand to reason, for a slow landscape plate will give a different negative from one made with an emulsion of high rapidity. I therefore use two grades of plates, one quite slow, giving great contrast, the other several times as rapid. In the former I use the Eastman plate, for the latter the transparency plate made by the Cramer Dry Plate Works, of St. Louis, Mo. These two varieties are nsed as follows:—Given a very strong, perhaps even harsh, negative, qnite dense, and yet with plenty of detail. In order to hring out all the best points of the negative, a strong, intense light is required, and nothing but sunlight seems to answer the requirement. A weaker light will not penetrate the dense portions of the negative, and the corresponding parts of the positive will lack detail. Furthermore, the negative probably possesses too much contrast already, and the endeavour should he to rednce this contrast, and at the same time obtain all the detail possible. I therefore use here the fast lantern-slide plate, and fully time the exposure, using a diluted developer. The harshness of the negative is thus materially reduced in the positive, and the rapidity of the plate makes it more susceptible to the weak light coming throngh the dense portions of the negative, and thns renders the detail properly. Lantern slides made in this manner are usually quite warm in tone.

Now, on the contrary, suppose a soft, thin negative full of detail, hut with comparatively little density. Here the advantage of the slow plate and the soft north light becomes apparent. This soft, even illumination is amply sufficient to penetrate any part of tbe negative, and yet, not being so intense as the sunlight, does not so rapidly overtime the plate. Tbe slow lantern-slide emulsion is amply sensitive enough to render the detail perfectly in all parts of the negative, and with a moderately short exposure gives good contrast and brilliancy much exceeding that of the original. It is thus possible to ohtain from an inferior negative quite a crisp and brilliant lantern slide. Tbe tones obtained by this metbod are usually grey or black.

For a developer, I use a mixture of eikonogen and hydroquinone in the porportion of fifteen parts of hydroquinone to eigbty-five of eikonogen. Eikonogen hy itself does not always give the brilliancy or the density desired, but tbis is easily ohtained when a small percentage of hydroquinone is added. The development of a lantern-slide is an entirely different matter from that of a negative. In the latter, the time of exposure, and the intensity of the light, are always, to a certain extent, unknown factors, and the developer must be modified according to the necessities of the case. With the lantern-slide plate, the developer, as far as regards the proportion of reducer and alkali, is always the same, so also is the lighting of the negative. The developer should, therefore, be of a standard strength ascertained to give the best results with a normal exposure, and then, wher making the exposure, it must be shortened or lengthened until the desired result is obtained. It will not do here to give a short exposure, and then push development by adding more alkali. The plate will soon fog, and an amount of fog which might perhaps be allowable in a negative would be fatal for a good lantern-slide. Nor will it do to overtime, and then restrain development with a bromide, for we will he apt to get harshness, much density, and opacity in tbe sbadows, all fatal defects for a good slide. What should be songht is a correct exposure, then a normal developer, and as the former is always under our control, it is better to reject a few plates, and change the time of exposure until we have it just right, than it is to attempt to modify the developer.

The question of tone here comes in for consideration. This is a matter influenced, first, by the plate, next by the developer, next by the character of the light, next by the exposure, and, lastly, by the negative itself. As I have before remarked, the cool grey and hlack-and-wbite tones are preferred by many in America. There we use eikonogen, hydroquinone, ferrons oxalate, or pyro soda—all developers producing hlack or grey tones. The warmer tones in most of the slides made hy English workers are, I am told, due largely to the use of pyro and ammonia as a developer. Still, for true warm tones gelatine can hardly be made to equal those obtained with collodion emulsion, either washed or dry. It is quite possible, however, with a strong negative, a sunlight exposure, a little overtiming, and a developer well diluted with water, to obtain quite warm tones with an ordinary gelatino-bromide emulsion.

As far as regards fixing, there is nothing superior to the acid fixing bath, now so well known. It prevents staining and clears the plate thoroughly.

The plate should always be varnished, to protect it from the effects of moisture. I use for this purpose the "Zapon" varnish, a solution of nitro-cellulose in amyl-acetate and wood alcohol.

As regards matting, the square opening, with rounded corners, is used by us for all commercial slides. Amateurs who make their own slides vary the opening, however, making it oblong, upright, oval, or ronnd, according to the artistic treatment of the picture.

In lahelling the slide, a thumb label is placed on the lower left-hand corner of the face of the slide, while the descriptive label is placed on the opposite end (right-hand), sometimes on the face, but more usually on the back of the slide.

Much might yet be said regarding the arrangement of the negative, apparatus for varying its position (so that either the whole or but a portion can be used), the choice of lenses, varieties of cameras for reducing purposes, etc., but it would occupy too much time. The few extremely general remarks that I have made on the subject of lantern-slide making will, I trust, serve to indicate some of our most usual methods of working, and present, perhaps, one or two novel modifications of the orthodox and regular modes of procedure.

In a discussion, Mr. Sturmey, Mr. Bothamley, Mr. Cembrano, and others took part. The President said the difficulty in changing the size was that the apparatus had been made for that particular size, and an alteration would mean a great sacrifice of material. Gelatine plates had not so far given that deep black purple tone which was characteristic of wet collodion.

Mr. Guardia then read his paper on

ARTISTIC EXPRESSION WITH THE HAND-CAMERA.

At this period in the history of photography, when every user of a camera is sorely puzzled to know whether his work is fine art or not, it seems to me useful, now we are assembled here, to pause a few moments and consider where we stand and whither we are drifting.

While some writers claim for photography the highest artistic possibilities, others quite as strenuously assert that it is but a mechanical process, admitting of no variation in the hands of different workers, and, therefore, unworthy to rank as an art at all. Now, I think that the truth here lies, as is so often the case, midway between the two extremes, and that we should rather say that, though photography as generally practised is not an art, yet artistic expression is not impossihle to photography. Further, if we admit, as I am afraid we must, that photography has not as yet realised its proper sphere as an art, we may at least hope that the day is not far distant when, acknowledging its limitations and understanding its possibilities, photography will at last gain an honoured place among the fine arts.

But are we really doing anything towards this wished-for end? No, for the principles of art are order and culture, and in photography—in the photographic world of to-day—nothing hut disorder and confusion, yes, and ignorance too, prevail!

I am not now speaking of the great majority of people who "dabble in photography;" who go about the country securing pleasant mementoes of the places they visit with the sole aim of amusing themselves and entertaining their friends. They are quite right in what they do, for, after all, they stick to what will always be the most popular side of photography - *photography as a mechanical process*, in which good apparatus and dexterity of hand are their own reward. Neither, of course, am I addressing myself to the select few (real artists at heart) who are, each for himself, earnestly trying to find a clear path out of the difficulties which photography is constantly setting before them. Their work bears the seal of their strong individuality, and is therefore truly artistic.

But I am speaking of the general body of photographers whom you may see at our clubs, who often write in our papers, who cram our exhibitions with their worthless productions. There is not one of them but thinks himself a born artist. But look at their work, and you will see no art at all; merely a weak imitation of some other art by means of photography. And this work is turned out in cartloads, and is bemedalled hy omnisapient judges, and crushes out any real pictures that may have strayed amongst it. What wonder that in the end artists merely laugh at us!

Our photographic world is chaos. We are all authors, publishers, and readers; artists, critics, and judges. We elect scientists to decide weighty questions of art, and artists prattle about chemical problems. We all know so much that we are always quarrelling, and we only unite to howl down any man who shows a little originality, and who strives to rescue us from our slongh of despond. There are men abroad, and plenty of them, who before they hought a camera had never even stopped to consider that there was such a thing as art in the world, and who, probably, bave not seriously studied a single word about it since; hut their fingers were deft, and they produced negatives beautiful to look at, and which earned them a goodly show of medals. And, lo! one day they issue forth past-masters in high art. Other foolish people, after years of deep

study and constant work, hopelessly exclaim—"Art is long, and time is fleeting." Not so our facile photographer; be masters it all in a few months.

We clamour to be recognised as artists, but the bulk of the work at our exhibitions shows nothing but our absolute lack of taste. To select two samples only. Take first what we are pleased to call a "genre picture." How is it done? You begin by placing the cart before the horse, *i.e.* by first selecting your title, and then looking around how to construct your work of art. Some figures are now more or less gaudily dressed and stuck in impossible attitudes before an impossible background, and the *chef d'œuvre* is accomplished. The result is applauded by the general run of photographers as a marvellous feat—a wonderful inspiration. To a person of taste such productions seem eminently absurd; in fact, when they happen to represent historical subjects, the effect is often so incongruous that the authors themselves must at times feel ashamed of their own work.

A particularly mistaken class of *genre* pictures is that which results from "double-printing." Although this has enjoyed the advantage of being practised by some exceedingly clever people, their very best results have only served to prove that such tricks are entirely out of place in photography, and that nothing will ever be gained by these efforts to mimic methods, which are legitimate and admissible in painting and allied arts only.

Another proof, if one were needed, of the bad taste displayed by photographers is to be found in the mounts they use. We need not mention the wonderful green and chocolate bevel-edge enamelled cards on which the professional fixes his perishable productions. No one has ever called the ordinary portrait-taker an artist, except himself; but let us consider the mounts patronised by the "artistic amateur." Where could one find a more glaring proof of his incompetency to make photography a fine art than the "plate-sunk" mounts to which he consigns *his* efforts? What on earth a plate-mark has to do with a silver or platinum print, I presume no one has asked himself. We have here a deliberate fraud—a confession on the part of the man that he distrusts the art he practises, and an attempt to make people believe that what he is showing them is not a photograph.

This affectation is not art, and can do us no good. If a plate-mark is essential for our work, let us have a real one; let us print in photogravure.

Fault-finding is an unpleasant task, and I do not intend to continue in this strain. I think, however, that what I have said may account to some extent for the contempt which photography is experiencing from painters and other artists, who should be, and may yet prove, her best friends. It seems to me that artists have not taken photography seriously at all as yet, but how can we wonder at it when to the majority of photographers themselves a camera is only a plaything, and photography but a joke. My work of destruction having ended, I will attempt to explain the path which I think we shall have to follow when we clearly understand the nature of photography, and her only true sphere of action as an art.

That photography, an invention little more than half a century old, should have so quickly spread throughout the world, and should be practised with equal enthusiasm by persons so different in temperament, position, or education, it must have something in its very essence which supplies a universal want, or gratifies some feeling which all civilised men share in common. The love of beauty in nature is more general than one is likely to suppose, and the very feeling which finds its loftiest expression in our great painters is but evolved from the unconscious efforts of primitive man, and, in fact, arises from tendencies inherited from our animal ancestors. As Professor Baldwin Brown so aptly explains: "On every grade of his being man possesses an ideal self-determined life, existing side by side with, but apart from, his life as conditioned by material needs. This life expresses itself in, and is nourished by various forms of free and spontaneous expression and action, which on the lower grades of being may be termed simply 'play,' but on the higher grades take the shape of that rational and *significant play* resulting in art." Now, I think we may readily admit that the success of photography is due to its having given us an easy means to satisfy that desire for "play," that wish to forget the troubles of our daily labours which, as we have seen, is natural to us; or to its having made it possible to everyone to express by his unaided efforts whatever artistic feelings he may have acquired through natural disposition or education.

The foregoing remarks, while explaining the wide popularity of photography as a *pastime*, give us no gauge of its merits as an *art*. That photography *can* be made an art we need not waste much time in asserting. As Nadar recently said: "Why should photography not be an art, considering that in copying nature, the painter, the draughtsman, the sculptor, and the photographer, all aim at the same goal? Why should we trouble about the means employed if this reproduction of nature awakens in us the same impressions which we felt when looking at nature itself? The superiority of the painter, the draughtsman, and the sculptor would seem to consist in their power to create. But the use of the palette gives of itself no more right to the title of work of art to any reproduction of visible objects than does the employment of a camera. Photography is in itself a science and an art, and, above all, a means to an end. Its results essentially depend from the taste, the artistic knowledge and the temperament of the worker."

In forming an estimate of photography as a means of artistic expression, and in accounting for the unfavourable attitude which the general body of artists preserves against us, the enormous disadvantages which artistic photographers have had to contend, and are still contending with, should not be lost sight of. These are disadvantages which, in the nature of things, could scarcely be avoided in the early days of the new art, and which are now being rapidly overcome, and will no doubt soon entirely disappear. The principal difficulties which retarded photography in its progress as a fine art were—(1) The low sensitiveness to light of the materials employed, requiring long exposures, and (2) the inadequate nature and unmechanical construction of the apparatus used. The speed of plates has enormously increased within the last few years, and manufacturers are even now vying with each other to turn out plates of greater and greater sensitiveness. With regard to a more correct rendering of the different colours, however, much remains to be done. Celluloid films also promise considerable advantages over glass plates, though they are as yet scarcely perfect enough for the best work.

But it is the old apparatus which must bear the greater part of the blame for the low position which photography still occupies as an art. Lenses, it is true, have long been perfect enough, especially since the introduction of Jena glass. If the lenses generally used are of too short a focus, as undoubtedly is the case, the opticians are not to blame. In shutters, too, the photographer has been fortunate to secure the services of the highest mechanical skill, and though the modern shutter is a comparatively new creation (called into life by the increased sensitiveness of dry plates), it is already, both in speed and efficiency, well in advance of the present requirements of photography. With cameras, however, the case is very different. Designed originally by incompetent persons, they have remained to this day the evident production of cabinet-makers and carpenters, whose only improvements during fifty years may be said to be the substitution of the shaky bellows camera for its steady, but ponderous sliding-box ancestor, and the addition of simple movements, like rising front and swing back. The same type of apparatus has been adhered to, not by a few, but by all makers, and this, not only in the early days when the slow processes employed demanded nothing better, but long after plates had reached a high degree of sensitiveness. For fifty years photographers have had to carry about bulky implements, necessitating the use of a strong stand, and requiring long delays for setting them up ready for work. What wonder, then, that photography never reached its proper province among the fine arts—*the representation of life in nature*, with all its beautiful but evanescent phases and movement, which has only now become possible, thanks to the modern hand-camera.

"Fine art," says Ruskin, "is that in which the hand, the head, and the heart of man go together;" what chance has the hand, the head, or the heart with a 15 by 12 field-camera, and a tripod weighing five pounds? Before hand-cameras were invented, what was the aspect of nature as recorded by photography? A dead maze of trees and fields and buildings. The rivers and lakes showed no ripple; they were merely a mass of glaring white. The streets were deserted, and tenantless houses were but a mockery without reason. The beauty of cloud and atmosphere was unknown—was represented by acres of white paper. Here and there a group of soulless caricatures of human beings were, indeed, to be seen, all stuck up in constrained attitudes. Not breathing, and moving, and palpitating with life and energy, but either blurred out of all recognition or fixed in unnatural poses, like wax dolls glaring at nothing, "puppets without muscles and silhouettes without substance." Such was the world as depicted by the slow exposures of the old photography—an inane reiteration of topographical notes, or a spiritless multitude of lay figures in Sunday clothes.

But with the advent of the modern hand-camera, all this has changed. The ripple on the water can be seen and almost heard; clouds, fleecy or heavy, float across the sky; the elegant movements of the swiftest animals are recorded; bustling crowds of men, women, and children are shown to us, picturesque in their ever-varying, unconscious attitudes in the course of their daily occupations, their toil, or their play. The traveller to distant countries will no longer bring uninteresting records of ruins and desert solitudes, but animated pictures of the life, the troubles, and pleasures of the whole human race, from the tropics to the polar regions. A hand-camera, ever ready, easy to carry, and able to withstand all changes of climate and vicissitudes of travel, will help photography to out-

strip the other arts in the representation of all the evanescent phenomena of nature, in making nations know and understand one another, in furthering the brotherhood and union of the human race. Usefnl to every one in indeliby recording what he sees, it will help the stay-at-home to portray his friends in familiar and natnral attitndes, the traveller to bring back living rccords of his wanderings, the artist to show us nature as he sees it, deprived of its ugliness, and with its beauty enhanced.

This then is the true sphere of photography as a fine art. Creation is impossible to us; let us therefore leave this to other arts. But we still have the great power of *selection*, and of showing our good taste and artistic feeling. Let us cultivate this to the highest pitch we can attain, and employ it in the representation of life, and movement, and beauty of form in nature; a field large enough, and one which the other arts cannot touch. We shall then be doing good and useful work—work that will live.

The course which we shonld follow in our aim towards artistic perfection is, I think, clear enough, but to follow it means hard work.

Let us be true to ourselves, always willing to learn from others, bnt doing what we honestly think right, whatever the unedncated multitnde may say.

Let us study nature, for it is the fountain-head of all beauty.

Let us cultivate art that we may improve our good taste.

There is no reason whatever why we should not photograph everything that interests us, whether it is a picture or not; but let us acquire sufficient practice and knowledge to be able to see and secure a beautiful pose or subject whenever nature unexpectedly presents it to us in the course of our rambles. In order to do this with certainty, we must not only use good tools, but must gain great skill in using them. But let us never forget that tools and skill are but means to an end.

I should like to see the day when a photographer only shows *as pictures* one or two of the very best photographs he has taken during thc year—when he does his utmost to make these as perfect as possible, by carefully enlarging them, if nccessary, by printing, mounting, etc.

Let us have exhibitions of such selected work, let it be judged by *trained* artists, and then we shall stand a chancc of proving that photography can be made a fine art, for artistic expression is possible by mcans of the hand-camera.

Mr. Werner snbmitted that whilst photography is a fine art, photographers in the past had not been artists. Mr. Keene, of Derby, defended the use of plate marks for photographs. Mr. Ashman recalled to Mr. Guardia the fact that twenty years ago with the old slow methods and clumsy apparatus artistic effects were produced. Much was now said about the artistic side of photography, and some believed that any photographer two years old was quite out of it. He failed to sce it. Messrs. Traill Taylor, Fry, Birt Acres, Mowle, and others, continued the discussion.

Mr. S. Herbert Fry read his paper on

MULTIPLE FILMS.

The subject of compound or multiple-coated films is so new, and supplies so many fresh ideas for practical work, that I cannot pretend in this paper to do more than deal in a touch-and-go fashion with it. My remarks will only be valuable, if at all, for some practical suggestions as to the best methods of utilising the advantages which the principle of combining emulsions of differing characteristics and speeds into one film offers.

Novelty.

Although it would, perhaps, be safer to say that, for the prevention of halation, multiple films in gclatine emulsions are rather the result of a happy thought than an entirely new idea, yet, as far as a practical manufacture is concerned, there is, I think, little doubt of their absolute novelty. Experimentalists may have dreamed of some such thing; as, indeed, of what have they not? but it has not hithcrto become a realisation.

Still, we have in the old collodio-albnmen dry plate a compound film consisting of a collodion bath plate with an albumen sensitised film placed on top of it, and one of our veteran workers, Mr. Forrest, of Liverpool, only a few days since, spoke to me most eulogistically of that old method, and hopefully of the multiple gelatine film for sympathetic reasons.

That process is not only beyond my recollection, but probably there are few in this room who had any practical acquaintance with it.

Manufacture.

In making a multiple film dry plate, a coating machine may be said to be necessary to secure a regular flow of emulsion for the second and third coating. With this exception there are no technical difficulties but such as are common to the manufacture of dry plates generally. Each coating is dried before the next one is laid upon it, and the most important consideration of the emulsion-maker is to provide an emulsion with as small a proportion of gelatine to silver salt as possible.

Theory of the Film.

In determining the relative speeds and characteristics of the different films a large field for experience and experiment is open, and time alone can determine whether the present arrangement is that best suited to attain the end in view. This may roughly be stated to be the nearest approximation to a single film in which the top surface shall be of the highest possible speed, and the bottom of the film of a density-giving silver salt, an emulsion slow and dense in the highest degree. The film should gradually change from one characteristic to the other. In theory the lowest portion of the film should perfectly resist the passage of actinic light. Bolas has, I think, referred to this point in some of his recent writings, and I take it to be the ideal of a sensitive film suitable for all purposes.

Such a film, with our present knowledge, is not possible. We must be satisfied with the best substitute for it. I refer to this especially because it has been asserted that there are steps or jumps in the sensitiveness of a mnltiple-coated film which are ascribed to the difference in speed of the various separate coatings. I do not propose to do more than allude to this for a simple reason. An examination of the pictures produced by the films does not, I think, reveal any obvious fault answering to this criticism. I can conceive that, were a multiple film wrongly used, as, for instance, were the top film stripped off with the idea of securing a negative upon the lower film only, then, in snch a case, there might be a lack of detail due to the removal of the top layer, and this might appear to be a jump in the sensitiveness between the two films. Such a method of working is not to be recommended, and I do not purpose to seriously consider improper uses of the film. It not infrequently happens that dangers or difficulties anticipated in theory do not occur in practice. This is such a case.

As to the part played by the underlying films, I regard them as prepared to take np and usefully employ such actinic rays as fall beyond the scale of correct representation in the overlying films.

Distribution of the Image.

Let us assume a case in which the range of contrast is great, such as a dark interior with a light and bright window. Let us also assume that which, I think, is generally the case, that for such a subject an exposure upon a dry plate is more or less of a compromise between the time necessary to properly photograph the deep shadows, and that necessary for the bright lights. Indeed, if it be not so, where is the difficulty in making such pictures?

In the multiple film the image of the window will be formed upon the lowest film, and the middle tones upon the second film, whilst the details in the deep shadows will be upon the top film. In other words, the image will be distributed in a selective manner, and this can be easily demonstrated by stripping off portions of the film of such a negative, and ascertaining the action of light upon the lower films.

In the example given I have supposed that the exposure has been abnormal; that is to say, that the exposure has been made to act upon thc sensitive material so as to sufficiently impress the details in the deepest shadow upon the top film, leaving the brighter portions to act selectively upon the lower and less sensitive emulsions.

It is with such an exposure that the best value can be obtained from the multiple film. It is possible that, because better effects of light and shade are produced upon a multiple film by abnormal exposures, some have considered it a matter of necessity that such films should be, in a photographic sense, slow. This is an inference not warranted by the premise, as there is no reason to believe that the top film in any way loses speed by being imposed upon a film of emulsion instead of a glass plate. Without hazarding any conjecture as to the why and the wherefore, I think that, in a pictorial sense, there will be found a greater range of gradation and more roundness, and, if I may coin a word, more stereoscopicity, of effect, with an increased (or abnormal) exposure than obtains in a homogeneous film with any exposure.

In must also be borne in mind that, with the ordinary dry plate, the effect of more exposnre than will influence the region of correct representation makes for flatness of image and loss of true gradation. With the multiple film, however, it tends towards increased roundness of image. With an exposure calculated to reproduce the shadow details to their fullest extent, and which I describe as abnormal because it is more than can be usefully given to a homogeneous film, are the best results obtained with the new tool. I am disposed to suggest that this is only a natural result of the ability of the multiple film to successfully render a longer range of contrast. In other words, the sensitive film which will reproduce in natural ratio the widest range of light and shade may be expected to produce at the same time the best pictorial effect.

It is for this reason hat I am entirely opposed to the idea of overexposure and stripping the top film, a method which I regard as an

indication of failure to properly understand the principle of the compound film. We are, by this method, only able to make a picture upon one of the lower films. Now, for this purpose it is best to use such a one in its simple form, and not to risk failure by exposing through some other film, which has to be wasted. Wilful waste makes woeful want, as the old alliteration has it.

In point of fact, the useful detail of the negative will be found upon the top film, and this detail we cannot afford to lose in our negatives.

Halation.

The question of the freedom of the compound film from halation or light reflected from the posterior surface of the supporting glass plate depends upon two points—first, that the difference in sensitiveness between the top and bottom films shall be at least as great as the difference in the value of the light reflected from the brightest and the least bright portions of the object to be photographed; and, secondly, upon the method of development employed. There can be little doubt as to the efficiency of the principle employed, viz., that the light shall be intercepted and usefully (in the photographic sense) employed by the lower film. When "backing" is resorted to to prevent reflections, it is but a makeshift method of obviating the disagreeable effects of light in the wrong place. *The principle of the multiple film is to prevent the light passing into the glass or support.* In actual work a triple film gives practical freedom from this defect in most trying circumstances, and that without backing.

This is not the place to discuss whether a commercial article is effective or not; but I am compelled to add that if the difference in sensitiveness between the top and bottom films in the commercial article be not now sufficiently wide to secure without halation the most violent contrasts which may present themselves for representation, the principle still applies, and it is but necessary to lower the photographic sensitiveness of the bottom layer to perfectly effect the object. Or, as an alternative for extreme ranges of contrast, a fourth film might be added. So much depends, however, upon the method of development that I believe three films to be ample for all practical purposes.

Exposure.

I now pass to the question of development and practical treatment of the films. There are two exposures for multiple films.

First, *the normal* is the correct exposure for the top film, supposing it to be coated upon a glass plate by itself in the ordinary way. For such an exposure development will be normal, and precisely the same as it would be supposing the sensitive film to be of a homogeneous rapid character. That I need not discuss further.

The second exposure is one which I prefer to call *abnormal* rather than over-exposure. It will be apparent that, with underlying films of less rapidity, and each underlying film protected by a light-absorbing filter of emulsion above it, without recourse to any device in development for restraining or retarding the effects of the light action, the lowest films are capable of absorbing and using a largely extended exposure. I am informed that the relative rapidities of the three emulsions in the triple films are as 1, 4, and 30, and when to this margin of speed which exists between the top and bottom film is added the resistance to light passage of the first and second films themselves, it will be obvious that there is a considerable available margin of latitude in exposure. The point, therefore, when over-exposure in the usual sense of the word begins, is so far away from the normal as to render it unnecessary to take it into immediate consideration.

Development.

With an abnormal exposure, development must be "tentative." There are two methods:—

First, by working with solutions of suitable energy to develop the image until sufficient detail be obtained, and then, by the liberal use of a soluble citrate, to develop up density and contrast from the lower films, in which there is a store of density-giving emulsion to which the ordinary worker is quite unaccustomed; or, secondly, to begin with a very dilute and restrained (with bromide) solution, so as to secure in the lower film sufficient density first; afterwards, if necessary, acting upon the top film with a more energetic developer, to bring out such detail as may be desired.

I am not quite certain as to which of these methods I prefer, but I am largely influenced by the fact that it is the second method which the inventor of the plates relies upon to make his pictures. I have had the pleasure, on more than one occasion, of seeing him develop 15 by 12 interiors by this method with such ease, and so much regular success, as to make me doubtful of the propriety even of mentioning the first method.

I cannot do better, therefore, than give this method, premising that the same principle applies whatever developing agent be employed. The developer Mr. Sandell prefers is a mixture of hydroquinone, eikonogen, and rodinal, as follows:—

Concentrated Solution.

Hydroquinone	30 gr.
Eikonogen	100 ,,
Rodinal	9 drachm.
Sulphite of soda	2½ oz.
Carbonate of potassium	2½ ,,
Water to make	20 ,,

Supposing we have to develop a plate which has received, say, three times a normal exposure, generally the best results can be obtained with from three to six times a nominal exposure. Commence development with a weak solution, thus:—

Dilute Tentative Developer.

Stock solution	1 part.
Water	15 parts.
Bromide of potassium (10 per cent. solution)	

About two grains of the latter to the ounce of solution.

This will probably begin to produce an image in from two to four minutes. The highest lights should appear first (although they are in the lower films), and density and detail should grow steadily. The important point to keep in mind is that the high light should be developed by the first solution, rather than the detail. If detail comes freely, the developer may be considered too energetic, and the remedy obvious. If detail comes but little, it is of no importance, for being within the topmost film it can be readily acted upon and drawn out by a more energetic solution, and that without there being time enough for the stronger solution to affect the density-giving sub-film. Should detail grow faster than density, then, as we can only attack the density-giving sections of the plate *through the top film*, we are forced to resort to the first method of development, viz., the use of restraining citrates and bromides to enable the solution to get down into the lower films without overdoing the top layer. But by this procedure we risk making a thicker negative than by cautious development by the second method. In developing abnormal exposures in multiple films, if there be any error, let it be on the side of a too dilute developer to commence with.

The manifest simplicity of Mr. Sandell's method should, I think, commend it, and I suggest it as the easiest one and the most reliable. In case of need, however, density can be obtained by the first method with certainty, but it may become a little difficult to watch the action of development. By the second method, the progress of development can be easily followed, and it is not only not necessary for the image to be lost sight of, but it indicates the use of a too strong and energetic solution, or an insufficiently restrained one. The notion that with a multiple film development must be a closed book I ask you to remove from your mind. There is no such necessity, and, should the image be lost to sight, it is the clearest indication of injudicious procedure. I never expect to see any indication upon the back of a triple film of the image, and when I lose sight of the progress of development I know that it is because I have been impatient or unfortunate in my judgment. In such a case, however, with the reserve force of the multiple film a negative will be the result, where with a simple emulsion extreme flatness would be expected.

I have not mentioned pyrogallic acid development, nor do I propose to advocate any particular developing re-agent. Whichever be the reducing agent with which you are best acquainted, will be for you the right one to use. It is not the developer (the reducer), but the developer (the individual), which makes the negative. For pyro development, however, I think there is nothing better than the following:—

A.	
Neutral sulphite soda	5 oz.
Boiling water to make	10 oz.
B.	
Pyrogallol	1 oz.
Nitric acid	20 minims.
Water to make	10 oz.
C.	
Bromide potassium	1 oz.
Water to make	10 oz.
D.	
Carbonate soda (anhydrous)	1 oz.
Water to make	10 ,,
E.	
Citrate soda	1 oz.
Water to make	10 ,,

B, C, D, and E are not exact 10 per cent. solution. I prefer the sulphite in a separate solution, and concentrated.

Normal Developer.

Pyro solution	20 minims.
Bromide solution	10 ,,
Sulphite solution	60 ,,
Carbonate solution	40 to 80 ,,
Water to make	1 oz

Tentative Developer.

Pyro solution...	5 minims.
Bromide solution	5 „
Sulphite solution	60 „
Carbonate solution	10 „
Water to make	1 oz.

In place of this latter, the normal developer may be diluted from one quarter to one-tenth strength, although I prefer to have a larger proportion of bromide than is in the normal, and an equal strength of sulphite. The latter because, whilst doing no harm by its presence, it enables one to add stock pyro and carbonate to form a more energetic solution, without discolouring the film.

FIXATION.

There is only one other point to which I need call attention, and that is, that the fixing bath should be new and strong—8 oz. of hypo to a pint of water, and fixing should not be performed in white light. An acid fixing bath works well with multiple films, both hardening the gelatine and brightening the negative at the same time. The best form is:—

Hypo	8 oz.
Acid bisulphite soda	2 „
Water	1 pint.

With such a fixing bath, complete elimination of the soluble silver salts is quickly performed unless the solution is unduly cold. In this case the remedy is obvious. Warm the fixer to 55 to 60 degs. Fahr.

Mr. Henderson disputed Mr. Sandell's claim to originality of the idea of multiple films, and contended that the better plan would be to place the more sensitive film underneath. Mr. Wall said experiments had proved that halation was possible without light reaching the supporting glass. Instead of a fixing bath of eight ounces of hypo to a pint he suggested one of normal strength—one to four. The stronger the solution the slower the action. Mr. Birt Acres, whilst glad that Mr. Sandell had given such prominence to this question, thought his principle wrong: he would rather stop the light altogether than use it in obtaining unprintable detail.

(*To be continued.*)

Stereoscopic Photography.*

A REPLY TO "TECHNIQUE."

BY W. J. CHADWICK.

SINCE the last meeting of this club there have been many things done and published on photographic matters that might well occupy our attention as fit subjects for discussion. At the present time I wish to call your attention to an article on "Stereoscopic Photography" published in the April number of *Photographic Scraps* over the name of "Technique." As most photographers are aware, *Photographic Scraps* is a private journal, published monthly, under the control of the Britannia Works company, and "Technique" is their editorial contributor. No doubt many of our members have read the article in question, but by this time may have forgotten much of the particular statements it contained.

First of all, "Technique" is of opinion that the heading of his article—"Stereoscopic Photography"—would have given "greater gratification" to readers of photographic literature thirty years ago than to readers of the present day. If he infers, as I presume he does, that there were more amateur photographers interested in the stereoscope, or more stereoscopic cameras in the field, at that time, then I must beg to differ, since I believe there are more stereoscopic photographers (amateurs) to-day than there ever were, and I shall be prepared to submit some particulars and to argue my own case before a committee of three gentlemen, and to back my opinion to the extent of a very good dinner for the committee, "Technique," and myself.

Next we are told that the stereoscope did give a great impetus to photography at the period alluded to (thirty years ago), and that "there were abundant reasons for this; not the least was the apparently wonderful character of the pictures, which it was imagined were only possible as photographs, whereas, in reality very good stereoscopic pictures can be made by pen or pencil by any one understanding the principle of the stereoscope and of perspective drawing."

Now, if a tyro in photography had made such a statement, it would have been excusable, from the fact that he had not studied the subject; but when a professional scribe, one who writes on scientific matters for the guidance of others, and who sets himself up as an authority, displays such total ignorance of the subject, then I say there is not much room for excuse.

* Read before the Stereoscopic Club, July 5th, 1893.

As a matter of fact, there has never been an artist clever enough to make "a good stereoscopic picture by pen or pencil," and nobody who understands the principles of the stereoscope would be so foolish as to try. It is quite true there are outline designs—geometrical figures in white lines on a black ground—made for the stereoscope, but to call these "good stereoscopic pictures, drawn by the pen or pencil," would be a deliberate intention to mislead. If we leave out of the question the absolute impossibility of making two pictures stereoscopically dissimilar, and therefore ignore the whole principles of binocular vision, I say again there has never been a man born who could make two pictures so near alike as not to have their differences detected by the stereoscope.

The stereoscope is used as a test for suspected forgeries in bank-notes, a photograph of a genuine note being placed in the instrument along with another photograph of the suspected note, and a difference in the engraving so slight as not to be detected in any other way is at once made manifest by the stereoscope.

Next we are treated to some historical matter which is equally incorrect; and, as "Technique" would have been a very little boy at the time alluded to, I must remind him that dry plates were not introduced commercially at 2s. 2d. per dozen for half-plates. I remember paying 12s. per dozen; so that the price of commercial dry plates had nothing whatever to do with either the popularity or the decline of the stereoscope.

Next we are told that "one great complaint that always clung to stereoscopic pictures was the smallness of the view and the extreme minuteness of the object, not all subjects being alike suitable subjects for the stereoscope."

With respect to size, it has been demonstrated in this Club that when these small pictures are viewed by properly constructed instruments we get the apparent natural size of the object, and there were properly constructed instruments even so far back as twenty-five years ago.

I admit that thousands of improperly mounted pictures have been placed upon the market, and long-focus stereoscopes were introduced with a view of meeting the defects in the slides; but because this was done for commercial gain by those who did not understand the principles, is no sound argument against the stereoscope To say that "all subjects are not alike suitable for the stereoscope" just amounts to saying that all subjects are not suitable for binocular vision, or that, to look at certain subjects in nature, we should close one eye, which everybody will admit to be ridiculous.

A comparison is then drawn in favour of the "pleasure of turning over the leaves of an album and the efforts and the trouble of twisting about to peer into a stereoscope."

This is rather funny, for, as a rule, amongst my photographic friends I don't often find many albums worth looking at; but I have taken some trouble to produce a decent one, and I have tried the experiment scores of times by giving my friends first the album, which they usually finish within about ten minutes. After this I give them the very same pictures by the stereoscope, and these excite their admiration for an hour.

But, continuing, we have another comparison between the "selfish stereoscope" and the "popular lantern-slide." Well, as regards, selfishness, the same argument might be used against the microscope, but it would not detract from the merits of the instrument. I remember reading somewhere that a stereoscopic slide was always in season, daytime or night, winter and summer, in company or alone, and we cannot say so much for a lantern-slide; besides, I wonder if it ever occurred to "Technique" that from stereoscopic negatives lantern-slides were just as easily made as from quarter-plate negatives, and very much easier than from half-plate or larger-size negatives, or did it ever occur to him that a stereoscope could be passed round amongst a few friends, or that two or three stereoscopes were possible to be in use at one time when friends were present?

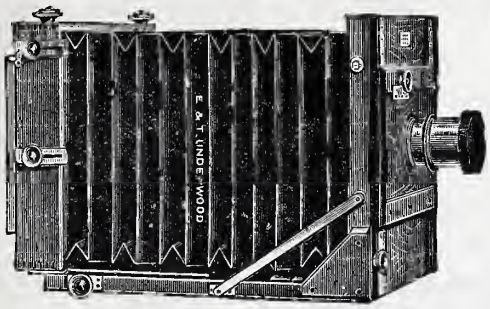
Next we are told that the majority of stereo slides are printed on paper and mounted on cards, and another comparison unfavourable to such stereoscopic slides is given by showing the rapidity and conveniences of printing lantern slides. Now, here again "Technique" has overshot the mark, for, so far as amateurs are concerned, only a very few make paper slides, because stereo transparencies on glass are so much easier to produce. Quite recently I had the honour to adjudicate upon a stereoscopic slide competition organised by the editor of the AMATEUR PHOTOGRAPHER, and out of twenty-three competitors only four sent paper slides. The other nineteen sent glass transparencies; but, apart from that competition, I happen to be in perhaps the very best position to know what amateur photographers are doing in stereoscopic photography, and I do not think that more than five or six per cent. of them make paper slides.

But now we come to some *personal experience* of "Technique," who tells us that he has made stereo pictures by a quarter-plate camera at two operations, "the camera being placed upon a simple arrangement known as Latimer Clark's parallel bars, which per-

E. & T. UNDERWOOD

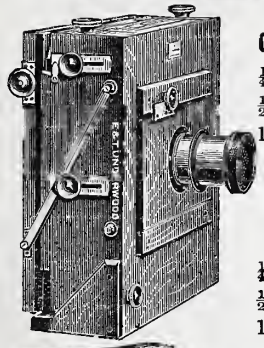
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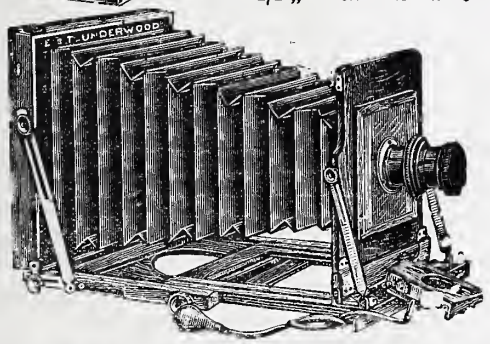
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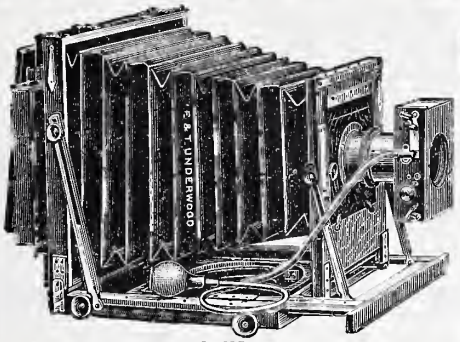
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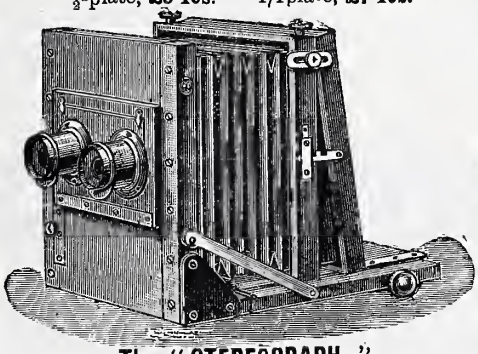
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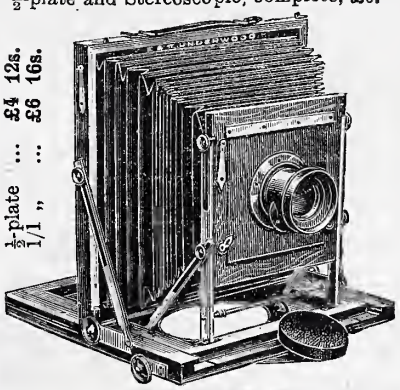


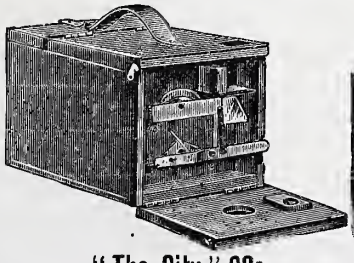
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For description see issue of June 17th last.—*Extract from Testimonials.*—"I was taking a densely-wooded stream with Phœnix Plate, stop F 45. My judgment said give two minutes, your instrument said give twenty. I acted upon its advice, and found result correct, as I have in every case hitherto when I have used it."—EDWARD PEACOCK.

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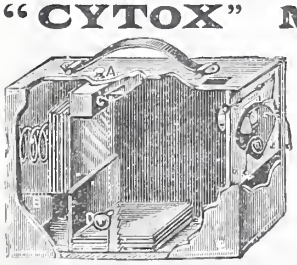
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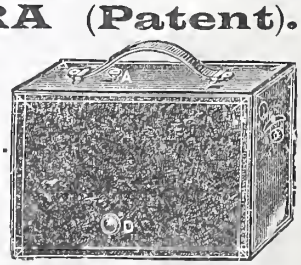
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mitted a side-to-side motion of the camera in order to obtain the requisite angle for stereoscopic effect." In reply to this, it must be said that Latimer Clark's "parallel bars" do not permit any *angle* at all, they keep the axis *parallel;* some modifications of this arrangement were made in years gone by, and these did permit *an angle,* but they were wrong in principle and in practice too, and the difficulty complained of, by the two halves of the negative being unequal, is just what might have been expected by anybody who had studied the subject. But "Technique" concludes his "personal experience" by his observance of these and some other defects in a number of slides published in the *Stereoscopic Magazine* of 1862.

The next paragraph treats of the number of people who cannot see pictures stereoscopically because there is something wrong with their eyes.

This is a tale I have heard hundreds of times, and in at least ninety per cent or more I have had the pleasure of proving that it was not their eyes that were wrong, but the badly-mounted slides or the defective stereoscopes that caused all the trouble. Here is a case in point. Just a little time before this article from the pen of "Technique" was published, Mr. John Howson, the managing director of the Britannia Works Company, called upon me, and, in the course of a very pleasant chat on general photographic matters, he told me that he had never in his life been able to see a stereoscopic slide stereoscopically by a stereoscope because there was something wrong with his eyes. "They are not of equal foci," he said. "Oh, is that all?" I replied, and I examined his eye-glasses. Seeing they were about like my own, I picked up a stereoscope from the table, and the first stereoscopic slide I could put my hands upon. After adjusting the instrument to my own sight, I handed it to Mr. Howson, saying, "You ought to see that;" and "I do," he replied, "I never saw anything more beautiful; show me another," etc. In conclusion, Mr. Howson paid me a very pretty compliment.

But "Technique" has a most wonderful control over his optic axis that leaves both Mr. Howson and myself in the shade, for he states that he can not only see slides stereoscopically without a stereoscope, but that he can "look at them from top to bottom of a window in Cheapside or Regent Street, and see every one stereoscopically at six inches to ten feet distant."

I admit there are a few people who can see slides stereoscopically, without a stereoscope, but, out of a good many people who state that they can do this, at least ninety per cent. are mistaken. Instead of seeing the right-hand picture with the right eye, and the left hand picture with the left eye—which, with slides mounted at three inches centre would entail a considerable divergence of the optic axis—they really see the right-hand picture by the left eye, and the left picture by the right eye, and this is done by converging the optic axis (squinting). Thus they see the very opposite to stereoscopic, viz., *pseudoscopic.*

But, in either case, stereoscopic or pseudoscopic, pictures viewed in this way—without a stereoscope—look very much smaller than they really are, and by the stereoscope they look larger than they really are. But to be able to see these slides stereoscopically at six inches or ten feet distance, as "Technique" says he can, is a most extraordinary performance; and, if the proposed committee and the dinner be arranged, I should like to have *something extra* on that.

Finally, "Technique" sums up the "essence of his remarks" by advising his readers to put their money in monocular cameras, and get as much solidity and relief as they can.

Now, allow me to sum up the essence of his remarks. I could do it best in two words, but will manage it in one word—PREJUDICE.

Societies' Notes.

PHOTOGRAPHIC EXHIBITION OF THE HOVE CAMERA CLUB,—*Prize List* (Open Classes for amateurs only).—P 1, set of six prints, landscapes, with or without figures; P 2, Set of six prints, marine subjects; P 3, Set of three prints, portrait and figure studies; P 4 (open only to amateurs aged 16 and under) Set of three prints, any subjects.—First prize in each of the foregoing classes, silver medal; second prize bronze medal (presented by the Hove Industrial and Horticultural Society). P 5, Set of six lantern slides, any subjects except architecture.—First prize, silver medal; second prize, bronze medal (presented by the Hove Camera Club). P 6, Set of six lantern slides, architecture, interior or exterior; subjects taken within the county of Sussex.—First prize, silver medal; second prize, bronze medal presented by W. A. Hounsom, Esq., Aldrington). P 7, One enlargement; may be a direct enlargement on paper, or from an enlarged negative; a print from original negative to be attached.—First prize, silver medal (presented by C. Job, Esq.); second prize, bronze medal (presented by Miss Fuller). Conditions.—(1) Exhibits must be the entire work of exhibitor; exposure, development, re-touching, printing, toning, and mounting. (2) Photographs may be printed by any process, or on any material, but with the exception of Class P 8, must not be enlarged or from an enlarged negative. (3) No picture is eligible for competition which has previously received an award. (4) Exhibitors may enter more than one set in any class, but cannot take more than one prize in such class. (5) No name must appear on the photographs, but a *nom de plume* must be written on or attached to each frame or mount, which *nom de plume* must also appear with name and address on the entry form. If more than one set be sent in, each set must be also numbered, thus—Class P 3, "Alpha," Set 1. (6) The judges have power to withhold any award if in their opinion the exhibits are not of sufficient merit. (7) Entrance Fees.—To non-members of the Hove Camera Club, Classes P 1, P 2, P 3, P 5, P 6, P 7, 1s. in each class; Class P 4, 6d. To members of the Hove Camera Club, 6d. in each class, except in Classes P 8, P 9, P 10, which are free. The entrance fee must be sent with entry form, duly filled up, to the Hon. Sec. of the Industrial Society, H. Emery, 142, Church Road, Hove, Brighton, on or before Friday, September 15th. (8) All exhibits from local exhibitors must be delivered at the Town Hall either on Monday, September 18th, between the hours of 4 and 8 p.m., or on Tuesday, September 19th, before 11 a.m. Exhibits from a distance must be sent, *carriage paid,* to 142, Church Road, Hove, Brighton, in time to be delivered on Monday, September 18th. If it is desired that exhibits be returned by post, a sufficient amount to cover postage must be enclosed with entrance fee, otherwise they will be returned by rail, carriage not paid. (9) The slides will be retained for about seven days for the purpose of a public lantern exhibition.

THE Postal Photographic Exchange Club, conducted by Mr. R. W. Copeman (Kuklos Cottage, Henstridge, Blandford), has a vacancy for one member. This club is on rather different lines to the general print-circulating ones, and the Secretary will be pleased to give any information to any intending member.

MR. C. FARRANT, a member of the South London Photographic Society, has just been presented with a testimonial by the Royal Humane Society for saving a boy from drowning. It appears that on the 25th of May last, Mr. Farrant and a friend were taking photographs by the side of the Thames. Noticing some children playing on a landing-stage for small boats in front of Greenwich Hospital, they were getting ready to take a snap-shot at the group when suddenly a cry for help arose, and a boy was seen struggling in the water, being rapidly carried out into midstream. Without waiting to take off any of his clothes, Mr. Farrant jumped into the river and succeeded in bringing the youngster safely to land. The South London Society have reason to be proud of their heroic member who on this occasion displayed such courage and presence of mind.

A CURIOUS incident occurred when the mother of the rescued lad heard of his perilous adventure, she was so filled with joy at his safety that she offered his rescuer *sixpence!* Although we may regard this act from a charitable point of view, and consider that in the eyes of the poor woman "saxpence" seemed a large sum of money, yet at the same time the fact of a boy's life being in one scale and sixpence in the other does seem rather ludicrous.

THE South London Photographic Society will hold their fifth annual exhibition at the Peckham Public Hall, Rye Lane, Peckham, S.E., on 7th, 8th, 9th, 10th, and 11th November next. In addition to members' classes, there will be open classes for the following:—Medalled pictures; medalled lantern-slides; pictures that have not received any award; lantern-slides that have not received any award. It is understood that the number of pictures and slides which any exhibitor may send in will be limited.

Societies' Meetings.

Brixton and Clapham.—Dr. J. Reynolds, F.R.G.S., in the chair. It was decided to afford members systematic assistance in the more elementary principles of photography. With this object in view the club elected a Committee of Instruction consisting of six members, each member of which will give the first half-hour of each general meeting for the purpose of answering any questions on elementary photography that may be submitted to him. A committee was also formed for the criticism of negatives and prints produced by the less experienced members. Anyone will now have an opportunity of submitting his work to the committee, who will report as to the composition, development, and exposure of the negatives, also on the development, printing, toning, and mounting of the

prints. In the event of lantern slides being submitted for criticism it will be necessary in every case for the member to furnish a description of the scene, the nature of the process by which the slide was produced, i.e., collodion, gelatine, etc., exposure, development, and mode of toning. Also to submit the negative from which the slide was produced. As soon as the usual business of the club had been transacted the President gave a short but interesting description of some of the extinct monsters that inhabited the earth in the pre-historic period. The description was illustrated by some beautiful lantern slides, which were very kindly lent for the occasion by the Rev. H. N. Hutchinson, B.A., F.G.S.

Hackney.—A meeting was held on the 4th inst., Mr. Puttock in the chair. Messrs. Rita, Low, Fort, and Dr. Harris were duly elected members. The popularity of the society was truly demonstrated, as application for membership was made from Burmah. Messrs. T. H. Smith, Dean, Gosling, Hudson, Roofe, showed work. The Hon. Sec. then showed Spratt Brothers new camera stand. It was easily set up, the principal advantage being that in place of screws at the first joint, it automatically locked and fixed itself. Mr. Gosling showed a view-finder which he had fixed in a small black box. The image could be seen in any light clearly. Mr. Roofe asked, could halation be reduced in any way? Mr. Beckett thought methylated spirit rubbed on the negative with wash-leather would do it tolerably. Mr. Cross showed a negative which he had intensified, but which was much stained. The general opinion was that it was not thoroughly fixed. Mr. Nunn asked if halation was not sometimes caused by stopping down? Mr. Beckett suggested that halation was not shown so much with a large stop, because "camera fog" was more evenly diffused. From the question box: "How to obtain brown tones on lantern plates." Various replies were given, such as using printing-out lantern plates, Alpha's, using carb. of ammonia. A good reducer was asked for, and that given by Howard Farmer was recommended. Mr. Roofe asked what to do to avoid metallic deposit on plates. The Hon. Sec. said methylated spirits would reduce it, and advocated for old plates full exposure and less alkali than usual.

Holborn.—On 7th inst., Mr. A. Horsley-Hinton (President) gave a lecture on "Printing Processes," with illustrations. In the course of his remarks he said the idea was gaining ground that since the advent of printing-out chloride paper that albumenised paper was fast becoming a thing of the past, which was far from correct. The demand for that paper was as large as ever in the trade. You cannot get the best results with albumenised paper, but much depends upon the negative. He thought gelatino-chloride paper was nice to work, pretty and of extreme finish, which goes a long way, but the colour is never pure, and that extreme of niceness is not commendable. Very beautiful artistic results could be obtained with the platinotype process; it was extremely simple to work, and in the course of development was so much under control. An albumenised print from a thin negative will give a flat picture, but a platinotype print from the same negative was very different, far away superior. At one time dense negatives were considered the thing; now the tendency was in the opposite direction. In his opinion thin negatives gave the best results. The mezzotype process was the best of all, the result the most artistic, and you had a print which was permanent. He had a mezzotype print on the wall of a well-lighted room for three years, and there was not the slightest change. Many examples were shown during the lecture.

North London.—On 4th inst., technical meeting. Mr. J. R. Williams in the chair. Consequent on the demonstration given at the last meeting, a discussion took place on Amidol and Metol as developers. Mr. A. E. Smith showed prints from duplicate negatives, one developed by Amidol by Mr. Morgan in the course of his demonstration, and the other developed with pyro by Mr. Smith. The prints from the latter were far superior. Mr. Spiller obtained better results with Amidol than pyro in developing instantaneous exposures, especially when the light had not been very strong. Mr. Brewer showed some excellent cloud negatives developed with Amidol. When required he had no difficulty in obtaining density, using plenty of bromide. The negatives were on isochromatic plates, one or two yellow screens being used as occasion required. He had had a special lens flange made with a slot in it to take the screens, a hand passing over the slot to keep out light. Mr. Groundwater had used Metol for negative work and, diluting the normal formula with an equal amount of water, obtained satisfactory results. There was a good show of hand-cameras, mostly of well-known brands, but Mr. A. E. Smith showed one of his own make, with a very ingeniously contrived shutter. Two wooden drop-pieces actuated by springs work in a rebate, they are released by a lever attachment in succession, and more or less quickly, according to the length of a toothed catch adjusted to the lever. Mr. Douglas had one made by Turnbull, of Edinburgh, which had focussing screen and would rack out far enough to allow the use of one combination only of the rapid symmetrical lens with which it was fitted. It was considered a matter of great regret that the word "detective" should ever have been applied to the hand-camera. It had given the dog a bad name, and the public now looked upon anyone carrying a hand-camera with suspicion, which, moreover, recent advertisements in the photographic press had tended to accentuate.

SOCIETIES' FIXTURES.

July 13—NORTHAMPTONSHIRE.—Annual Excursion to Stratford-on-Avon.
„ 13—LEICESTER AND LEICESTERSHIRE.—Excursion to Warwick.
„ 15—HUDDERSFIELD.—Ramble: Shawclough, Longwood.
„ 15—BRISTOL (Camera Society).—Excursion to Redcliffe Church.
„ 15—PHOTOGRAPHIC CLUB.—Excursion to Burnham-on-Crouch.
„ 15—MANCHESTER.—Ramble to Lymm.
„ 15—OLDHAM.—Ramble to Alderley.
„ 15—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOCIATION.—Excursion to Battersea Park.
„ 15—BOLTON.—Excursion to Haddon Hall.
„ 15—GOSPORT.—Excursion to Chichester.
„ 15—LEYTONSTONE.—Excursion to Highams Park.
„ 17—SOUTH LONDON.—Discussion of Figure Studies and Combination Printing.
„ 17—RICHMOND (Camera Club).—Informal Meeting.
„ 18—HACKNEY.—"Metol and Glycin," Messrs. Hauff.
„ 19—PHOTOGRAPHIC CLUB.—The Permanency of Gelatine Prints.
„ 19—CHEETHAM.—Isochromatic Photography.
„ 19—BOLTON.—Excursion to Haddon Hall.
„ 19—LIVERPOOL (Camera Club).—Excursion to Miller's Dale and District.
„ 22—BRISTOL (Camera Society).—Excursion to Weston-Super-Mare.
„ 22—SOUTH LONDON.—Excursion to Richmond Park.
„ 22—WEST LONDON.—Excursion to Greenford.
„ 22—MANCHESTER.—Ramble to Marple.
„ 22—LEWISHAM.—Outing to West Wickham, Hayes, and Keston. Leader, Mr. Stodart.

To Correspondents.

All communications for these columns are to be addressed to **The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.**

RULES.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES.

6129. **Penmaenmawr.**—Would any kind reader furnish me with information as to Penmaenmawr, whether one can purchase plates, etc., there, and if there are any dark-rooms available? Also any information as to hotels, and the best subjects in the neighbourhood, would be welcome.—R. C. L.

6130. **Beverley and its Minster.**—Will some Beverley friend tell me the best guide-book to Beverley, and to whom I shall apply for permit to photo interior of Minster?—RAMBLER.

ANSWERS.

6124. **Corfe Castle.**—In answer to this query I beg to state that no permit is necessary to photograph Corfe Castle. There is a fee of 6d. charged to enter. "H. A. C." will find Corfe well repay a visit with the camera, as I recently spent my holiday near there, and exposed sixteen half-plates on the Castle and its surroundings, all of which have come out admirably.—JAMES KENTISH.

6125. **Hand-Camera.**—There is no need for "E. Z. M." to alter his instantograph for use as a hand-camera. All he has to do is to focus, most carefully, on a distant object and mark the extension board of the camera so as to be able to place it at the same focus at any future time; the camera is now set at the so-called "fixed focus" and everything beyond a certain distance will be in focus. This point can be found by examining a view focussed on the ground-glass and measuring the distance from the camera to the nearest object which is in sufficiently sharp focus, and this ought to be done with each stop and a record kept. If it is required to photograph nearer objects, the foci for the required distances ought to be marked on the extension board. The ground-glass ought to be unscrewed and put aside, and a finder attached to the camera. There are plenty of these which can be so arranged as to be attached or detached as required. If it is an object to conceal the camera it is a simple matter to place it inside a wooden box and have the shutter worked from the outside by a piece of string.—J. G. P. VEREKER.

6126. **Snap-shot Developer.**—I think that "E. Z. M." will find the Paget formula most satisfactory for their plates, or he could keep the pyro-gallol dry and add it, when required, to the ammonia

and bromide solution, which is practically the same as a one-solution developer. If the developer he uses will not give density, the only remedies are either to intensify or else to copy the negative.—J. G. P. VEREKER

6126. **Snap-shot Developer.**—This is a well-worn question, I think, by this time. I do not believe in amidol for snap-shots. I use the hydroquinone sold in two bottles (1s. 6d.), which I find very successful for instantaneous shots. I do not recommend one-solution developer.—D. H. W. PREEDY.

6127. **Lodgings at Ilfracombe.**—I beg to advise "Metaphoric" to some of the best lodgings I have ever been in—MRS. Dyer, Belle Vue, Portland Street, Ilfracombe, North Devon; or, if boarding-house is preferred, Bailey's Imperial Hotel, Ilfracombe. Shall be pleased to give any further information if "M." cares to write me, as I have just returned from Ilfracombe. Address with Editor.—TRIX

QUERIES UNANSWERED.

June 2.—Nos. 6102.
" 9.—Nos. 6106, 6108.
" 16.—Nos. 6109, 6110, 6111, 6112, 6113.
" 23.—Nos. 6115, 6116.
" 30.—Nos. 6118, 6119, 6120, 6121, 6123.
July 7.—6128.

EDITORIAL.

BOTANY BAY.—There was such a run on the forms that we had to get a fresh supply; they have been sent on now, though. The best thing to hold films flat on the retouching desk is a cut-out mount of stout substance, and rather loose indiarubber bands. Yes, the prints may be rolled and mounted, by others than yourself.

A. W. COOK.—Very sorry; we shall be out of town on 21st.

G. ROBINSON.—The prints, a sample of which you send, were on Mezzotype paper, about which you will find notes on p. 324, November 4th, 1892, and p. 344, November 11th, 1892, and p. 405, December 3rd, 1892.

G. H. EVANS.—We should be inclined to choose No. 1 on your list, and this, fitted with a Newman and Guardia's changing box, would make you independent of dark slides. The Blair slides are light and reliable.

A. N. GIBBS.—Many thanks; we will look into the matter.

A. D. TAYLOR.—Your lens includes rather too wide an angle; otherwise the print is very good.

J. GROSE, JUN.—We are sorry we have not a negative to send you, but use soda instead of potash and reduce the quantity of metol, and dilute the developer with water. You will find a paper on the subject elsewhere this week. There is no book recently published bearing on the new developers, but Lyonel Clark's "Development," price 1s., from our publishers, is worth getting.

J. W. S.—(1) The shutter will give $\frac{1}{15}$th to sky and $\frac{1}{25}$rd sec. to foreground. (2) The angle included is about 44½ deg. Print No. 1 wants clouds, and the black rails are offensive. Surely there is a better point of view than this; by the side of the tree or hedge would have been better. (3) Vignetting absurd, and wants a principal object; now one cannot detect why it was taken. (3) We should have preferred to have placed the camera more in the left-hand corner, and looked round the bend more, and taken it the other way of the plate so as to include the tops of trees. (4) Bad, get further off, and look at these two pollarded willows at an acuter angle, so that they may not cut the picture into bits. (5) We do not quite see why this was taken. (6) Why vignette? (7) The figure is rather too central, but the soft, misty effect is very pleasing. (8) Too far off, if the horse was intended to be the principal object. (9) Is rather good, though too much foreground and patchy in tone; see note to 3. We cannot see that the top of your tree is so much too dark, the difference is slight, and could be easily rectified with a little yellow matt varnish. For soft negatives and cloud effects it is almost preferable to use plenty of sulphite and soda. Always glad to help you.

FRAUTERNO.—Your fixing bath is probably acid; add some bicarbonate of soda, about ½ oz. to every pint, and carry toning on until, on looking through the prints, they have lost all trace of redness in the shadows.

D. TAYLOR.—If the plate seems to shrivel up in the developer, it is due to the developer and the hot weather combined; but undoubtedly the peculiar stains on the plates are due to your placing the plates into the alum and fixing baths without washing properly. If you want to use alum, you must wash your plate for at least fifteen minutes in running water, and make the alum solution acid, and then wash for at least half an hour after the alum and before fixing. If you want to use alum, it would be advisable to use the alum sulphite and hypo fixing bath recommended a week or two back. Do you want negatives back?

A. E. BARRETT.—Write to Park, 5, Station Buildings, Acton Street, Kingsland, for price lists of the Bruno hand-camera.

J. LAWRENCE.—We cannot understand how, with a 4 in. lens and a camera extension of 11½ in., you cannot get a focus. Surely you must have made a mistake, for to photograph anything the same size, you only want 8 in. between lens and screen, and you would then have 3½ in. to spare. Send us up a rough sketch of camera, and the way you have fixed it.

G. E. CARTER.—The blisters, as we expected, are caused by your not preparing the paper first. You must give the paper a substratum or preliminary coating of gelatine or albumen. You would find full instructions in the "Amateur Photographer's Annual," 1893, p. 20 and 21, with an illustration in carbon. But you can prepare a solution of hard gelatine, 16 gr. to the oz., and add ½ gr. of chrome alum to every oz., give as thin a coating as possible, and then squeegee the tissue on to it when dry, and you will get out of your trouble.

B. T. NUNNS.—No, we should not say there is the slightest disadvantage from your method of working the bath.

W. C. PERRY.—Either your fixing bath was acid or else you did not carry toning far enough. The process should be carried on till the print has lost all sign of redness on looking through it.

RAMBLER.—(1) There is not much choice in the matter of jets, but try one of Chadwick's, 2, St. Mary Street, Manchester, with mechanical adjustment, and one of his triple condensers of 4½ in. diameter. (2) Yes, you may depend on the prints being permanent when toned in the bath you use, and if properly fixed and washed.

TRIX.—(1) We can hardly say they are better; they are, however, quite as good. (2) Try the following:—

Nitrate of lead	80 gr.
Hyposulphite of soda	3 oz.
Water	16 „

Dissolve, and add—

Chloride of gold	4 gr.

Place a few useless untoned prints in it and leave for an hour and then tone.

COMPETITOR.—If you will send on your name and address we will write you.

J. W. FORREST.—In photographing landscapes with distant mountains the chief thing to take into consideration is, are there any dark objects in the foreground which should show detail? If so, you must expose for the dark objects and let the distance take care of itself, looking after it only in development, by beginning development with a very small quantity of pyro or reducing agent and getting thin soft negatives. One of the new developing agents would be useful in this way. We hardly see why you should not use a screen; it is in such cases that the value of the screen is felt.

R. C. DAWS.—There is no book published on the subject, but we hope to commence next month a very exhaustive series of articles on this subject.

AGNOSTIC.—One of the best formulæ is, soak soft gelatine, 200 gr., in 6 oz. of water for an hour, dissolve by the aid of heat, and add gradually 2½ oz. of methylated spirit, stirring continually. Melt every time it is required for use. One of the simplest is—

Hydroquinone	10 gr.
Sodium sulphite	40 „
Distilled water	1 oz.
Carbonate of soda	80 gr.

For use, mix with twice to four times the quantity of water.

R. J. C. WOOD.—There certainly is a flare spot in the print you send. We hardly think the nitrate would cause the pinky tinge; it looks as though the bath was weak in gold. Try adding a little nitrate of lead to the bath.

Sale and Exchange.

RULES.

CHARGE.—*Twelve words or less for Fourpence, Every additional three words, one penny. The name and address of the sender must be paid for. (A single figure, or group of figures undivided by letter, space, stop, or words, counts as one word; compound words count as two words.)*

DEPOSITS.—*Money for goods forwarded on approval may be deposited with the Publishers of the* AMATEUR PHOTOGRAPHER, *who will hold the amounts deposited until they are satisfied that the transaction has been completed to the satisfaction of buyer and seller.*

COMMISSION.—*A charge of 2½ per cent. will be deducted from all deposits whether a sale is effected or not. Minimum charge* 1s.

PAYMENT.—*All payments are to be by cheques or Postal Orders, made payable to Hazell, Watson, and Viney, Ld., 1, Creed Lane, London, E.C.*

PAYMENTS *should be made in Postal Orders or Postage Stamps.*

CARRIAGE *must be paid on all apparatus sent for report, and they will be returned carriage forward.*

ADVERTISEMENTS *can be inserted under a number the name and address being registered, and letters forwarded for a fee of 3d. to cover postage.*

Cameras, etc.—Half-plate camera, three double slides, every possible movement, 70s., new; Lancaster's Omnigraph hand-camera, carries six quarter-plates, good as new, 17s. Seen by appointment.—40, Tachbrook Street, S.W.

5 by 4 detective camera, cost 2½ guineas, cash 38s.—Benjamin, 5, Walsall Street, Wolverhampton.

Underwood's whole-plate President camera with three double dark slides in waterproof case, new this season, in splendid condition, approval, deposit, £6.—G. H. Evans, Newton Heath, Manchester.

Cameras, Lenses, etc.—Quarter-plate mahogany camera, double dark slide, instantaneous lens, bargain, 22s.; approval. Write, Zoka, 498, Harrow Road, W.

Lancaster's half-plate lens and shutter, 16s. 6d.; three half double instantograph dark slides, 6s. 9d. each; three-fold stand 9s. 6d.; approval; will exchange for oushion safety bicycle. — Adams, Hermitage Mews, South Tottenham.

5 by 4 Tourist camera fitted with Dallmeyer's R.R. lens, one double dark slide, first-class condition, price £5; Hare's automatic changing box for twelve plates, 10 by 8, with dark slide, £2.—Homfray, Penllyn Castle, Cowbridge, Glam.

Stereoscopic camera by Horne and Thornthwaite, very compact, with lenses and four double backs, splendid condition, £4.—Nelson, 18, Dorchester Place, Blandford Square, N.W.

Shew's quarter-plate Eclipse, with lens and shutter, rising front, finder, level, three double backs for films, one do. for plates, in leather case, scarcely used, cost £7 12s., offered for £5.—No. 414, office of this paper, 1, Creed Lane, Ludgate Hill, E.C.

Enlarging Apparatus. — Cantilever enlarging apparatus (Hume's), 5 in. condenser, without objective, little used, £2 15s.—McGibbon, Chemist, Edinburgh.

Hand-cameras, etc. — Turnbull's hand-camera, quarter-plate, with good R.R. lens and shutter, two finders, four double film slides, also Turnbull's walking-stick stand for same, price 35s.; Eastman roll-holder, 7½ by 5, old pattern, price 10s. 6d.; deposit.—W. S. Talbot, 15, Cromwell Road, S.W.

1891 Talmer hand-camera, 12 plates, rapid rectilinear lens, Taylor and Hobson's finder, perfect condition, £3 3s.—Guthrie, Bonnington, Edinburgh.

Hand-camera, Fallowfield's Facile. 12 quarter-plate carriers, sunk view-finder, as new. What cash offers?—C. W. S., 19, Benson Road, Croydon.

Optimus hand-camera, quarter-plate, three double dark slides, focussing screen, view finder, shutter for slow or rapid exposure, covered in black leather, black leather case and strap to carry same, price £2 5s.; on approval; deposit with Editor.—Bate, Milton, Gillingham, Dorset.

Shew's universal hand and stand camera, Eclipse lens and shutter, three double slides, focussing screen and cloth, finder, waterproof cover and strap, £5 5s.; Thornton-Pickard shutter to fit above, 15s.; Adams' Cyclist stand, 15s.; all perfect condition; approval on deposit.—H. Stanbury, Half Moon Hotel, Exeter.

Quarter-plate Lancaster's Rover hand-camera, takes 12 plates, good as new, cost 63s., price 42s., lowest; no approval. Can be seen between 10 and 12 morning. Write for full particulars.—Lee, Princes' Wharf, Jews' Row, Wandsworth, London.

No. 3 Kodak Junior with film, £5 5s.—E. Phillips, Bridge Street, Leatherhead.

Folding Kodak, 5 by 4, rollholder containing about 40 exposures, glass plate attachment, three double backs, in leather case, cost over £13, take £10, only used a few times, quite as good as new.—Hardcastle, Stonegate, York.

For sale, Vanneck hand-camera, holds 12 quarter-plates, with Watson's special rapid rectilinear lens, with iris diaphragms, complete in solid leather case, Watson's special Cyclist's tripods in canvas case, almost new, £7 10s. the lot, cost £14.—Clay, 11, Eldon Road, Cardiff.

Lenses, etc.—9 by 7 rapid rectilinear, iris diaphragms, splendid definition and very quick, perfect, 35s.; 7 by 5 R.R., fine lens, Waterhouse stops, 18s. 6d.; approval; deposit.—Miss Summers, Hillesley, Glos.

Dallmeyer 12 by 10 R.R., perfect condition, £6 10s.; Serjeant time and instantaneous shutter, 15s., or £7 the two.—Field, Montana, Blackheath, S.E.

Half-plate extra rapid rectilinear lens, exquisite definition, iris diaphragms, detachable hood, works *f*/8, equal new, 27s. 6d., worth double, bargain; approval—Photo, 10, High Street, Harlesden, N.W.

Giving up photography. Will sell whole-plate rapid rectilinear lens, 20s.; half-plate, 15s., cash; letter only.—Ridge, 1, Williams Place, Kensal Green, London.

Whole-plate or 9 by 7 R.R. lens, iris diaphragms, finest condition, definition perfect, accept £2. Particulars, Iris, 121, Shirland Road, London, W.

Negatives, etc.—Studies of children, instantaneous photos, six professional negatives, 1s. 3d.; forty years' experience, showing requisite density. — Richford, Wells, Norfolk.

First-class negatives by eminent deceased photographer, showing requisite density, retouching, etc., six post free, 1s. 3d.—Townsend, 5, New York Place, C-on-M., Manchester.

Rollholder.—Rollholder, quarter-plate Eastman Walker, almost new, and two 48 exposure rolls, price 30s.—W. G. Wright, Lauristen, Derryvolgie, Belfast.

Sets.—Lancaster's half-plate camera, lens, etc., and photographic requisites, splendid condition.—Amateur, 110, Rosebery Square, Rosebery Avenue, E.C

Genuine bargains. An unique 10 in. by 8 in. outfit, consisting of Watson's Acme camera, six double backs, brass-bonnd tripod, etc., complete, W.A. rectilinear, W.A. landscape, rapid rectilinear, and L.F. rectilinear landscape lenses (all by Dallmeyer), giving a range of focal lengths from 6½ to 26 in.; Wollaston diaphragmatic shutter with rotating stops, and Newman's pneumatic brake; also flap shutter by Taylor, Son, and Hobson; Dallmeyer's view meter; ditto, high-power focussing glass; and Watkin's actinometer, all fitted in velvet-lined and partitioned leather cases; also Ferrero's magazine film carrier, cost over £80, price £50. Satisfactory reason for selling. May be seen by previous appointment. Also one dozen 10 by 8 Scovill printing frames, about half a gross of England's and Carbutt's cut films, same size, 100 or more very best English gilt-edged mounts, and numerous sundries for 10 in. by 8 in. outfit. Cash offers wanted.—E. R. Shipton, 140, Fleet Street, E.C.

Half-plate Instantograph, three double slides, Optimus lens, two shutters, all in perfect condition, with leather case and tripod complete, price £6.—M. Elliott, 10, Woodquest Avenue, Herne Hill, London.

Half-plate Instantograph, six Tylar's metal slides, lens, tripod, case, and accessories, £5; exchange for cushion safety value £6.—Brooker, 13, Vanbrugh Hill, Blackheath.

Beginner's complete set, cost £7 10s., 50s.; AMATEUR PHOTOGRAPHER, complete set to date, nine vols., bound, 25s.; quantity of English and American handbooks, list.—97, Woodstock Road, N.

Lancaster's 1890 quarter Instantograph, lens, three double slides, shutter, stand and case, camera case, dishes, frames and cutting shapes, £2 5s.—Pyro, 57, Dudley Street, Brook's Bar, Manchester.

Lancaster's quarter Instantograph set, complete, with three double slides, dishes, printing frames, strong box, and waterproof case, 42s.—J. C. Gishorne, Alexandra Park, Nottingham.

Slides.—50 coloured slides. Ireland, lecture set, 20s.; London street fire, effects, 3s., cheap.—20, Pickering Street, Everton, Liverpool.

Stereos. Apparatus.—Stereoscopic hand-camera (6½ in. by 4½ in. plate), six double backs, Dallmeyer's patent rapid stereographic lenses, rectilinear, working at *f*/4; Wollaston diaphragmatic shutter with rotating stops, rising and falling front, swing-back, facilities for using single combinations of lenses, and focussing screen. Built to special order at a cost of nearly £40. Price £15 (lenses and shutter alone cost more money). —E. R. Shipton, 140, Fleet Street, E.C.

Studio.—Studio, portable, tenant's fixture, 9 by 22 ft., beautifully fitted, complete, take £30. Can be seen any time, fare 1s. 3d. from Holborn or Victoria.—Cox, Chemist, Swanley.

Sundries.—Offers wanted for 8 in. useful burnisher and 10 ft. of rubber tube.—Beatty, Thekla Street, Chadderton Road, Oldham.

Eastman's 8½ by 6½ roller slide, £2 5s.; Lawley's 8½ by 6½ rapid rectilinear lens, Waterhouse stops, £2 10s.; Ross 12 by 10 orthographic lens, £4.—E. Brightman, Lyndale, Redland Road, Bristol.

Small revolver in case, nickel, pearl handle, exchange quarter camera slides.—Jeffrey, 40, S. Richmond Street, Edinburgh.

WANTED.

Lenses, etc.—Wanted, 5½ in. R.R. lens by recognised maker.—C. R. Morse, Wickham, Witham, Essex.

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Bargains in Cameras and Sets.—Whole-plate Spanish mahogany camera by Douhtlet (Moorgate Street), back and front extension, rising front, swing and reversing back, leather bellows, fitted Optimus rapid euryscope lens, Waterhouse stops, works *f*/6, Newman's time and instantaneous shutter, three double book-form slides, in solid leather case, and two-fold stand, grand lot, £12 10s.; Whole-plate Lancaster special brass-bound Instantograph, double extension leather bellows, rising front, reversing and swing back, fitted Lancaster's lens, iris stops, shutter, two double book-form slides, and folding stand, £6 17s. 6d.; half-plate patent collapsible camera, double extension leather bellows, rising front, swing and reversing back, wide-angle movement, very light, width when closed 2 in., fitted very fine rapid rectilinear lens, iris stops, three double book-form slides, and three-fold stand with lower sliding joint, bargain, £6 6s.; Lancaster's ½-plate Instantograph, double extension leather bellows, swing back, two double slides, Lancaster's lens and shutter, and folding stand, 60s.; ½-plate Optimus rapidograph camera, double extension, best leather bellows, reversing and swing back, rising and falling front, fitted three best double book-form slides, metal divisions, clips and catches, Laverne's best aluminium rapid rectilinear lens, iris stops, works *f*/8, three-fold ash tripod and case, warranted as new, £7 17s. 6d.; Lancaster's half-plate Instantograph, fitted Lancaster lens, instantaneous shutter, two slides, and folding stand, £3 17s. 6d.; quarter-plate camera by Ross, square, leather bellows, rising and cross front, swing back, reversing, fitted Optimus rapid rectilinear lens Waterhouse stops, three double book-form slides, with patent light-tight joints and catches, in solid leather case, and two-fold stand, grand lot, £6, cost £10 10s.; Lancaster's ½-plate special brass-bound Instantograph, double extension leather bellows, swing back, etc., three Tylar's medal and one mahogany dark slides, fitted Lancaster lens, iris stops, and see-saw shutter, and folding stand, £2 5s. All above sets guaranteed as described in every detail. On view, City Sale and Exchange, 54, Lime Street, corner Leadenhall Street, City (late Goy's Medium). Second-hand apparatus bought, sold, or taken in exchange. Inspection invited.

Bargains in Hand Cameras.—C Daylight Kodak, fitted R.R. lens, time and instantaneous shutter, two finders, adjustable focus, loaded new spool of twenty-four films, covered morocco leather, £4 5s.; Rover hand-camera, fitted Lancaster lens, see-saw shutter, finder, carries twelve quarter-plates, in leather case, 45s.; Freena hand-camera, fitted Beck's rapid rectilinear lens, time and instantaneous shutter, finder, loaded twenty films, covered morocco leather, finest condition, £4 5s.; Optimus Detective hand-camera fitted optimus rapid rectilinear lens, time and instantaneous shutter, two finders, adjustable focus, three double slides, covered leather, £4 7s. 6d.; No. 2 Kodak fitted rapid rectilinear lens, time and instantaneous shutter, carries 100 films, finder, covered leather, in leather case, £3 17s. 6d., cost £7; Adams' Otto hand-camera, fitted landscape lens, time and instantaneous shutter, two finders, carries twelve quarter-plates, covered leather, best condition, 40s.; half-plate Shew's Eclipse hand-camera, fitted Shew's rapid rectilinear lens, rotating stops, Shew's patent shutter, four double slides, hook form, complete in waterproof case, £6 10s.; Talmer's hand-camera, fitted rapid rectilinear lens, time and instantaneous shutter, two large finders, carries twelve quarter-plates, bag changing, quite new, £4 5s.; No. 1 Kodak, fitted rapid rectilinear lens, time and instantaneous shutter, carries 100 films, finder, in leather case, 37s. 6d., cost £5 5s.; Talmer hand-camera, landscape lens, rotating stops, two large finders, carries twelve quarter-plates, bag changing, 55s.; King's twin-lens hand-camera, very fine landscape lens, time and instantaneous shutter, full-size finder, automatic changing, carries twelve quarter-plates, perfect condition, 27s. 6d. All above are warranted as described. On view, City Sale and Exchange Rooms, 54, Lime Street, corner of Leadenhall Street, City (late Goy's Medium). Second-hand apparatus bought, sold, or taken in exchange. Inspection invited.

Bargains in Lenses.—Wray's 18 by 16 narrow-angle landscape lens, Waterhouse stops, diameter of lens 3½ in., focus 25 in., condition as new, £4 4s.; Wray's 9 in. wide angle rectilinear, suitable for whole-plate to 12 by 10, iris stops, quite new, £4 10s.; whole-plate Ross's rapid symmetrical lens, fitted Waterhouse stops, grand definition, covers well, focus 10½ in., good condition, £4 15s.; Underwood's whole-plate rapid rectilinear lens, iris stops, best condition, £2 15s.; Optimus 3B quick-acting portrait lens, fitted Waterhouse stops, works *f*/4, focus 10 in., diameter of lens 3½ in., condition as new, £7 12s. 6d.; 8 by 5 Grubb aplanatic doublet lens, fitted Waterhouse stops, works *f*/8, best condition, £3 15s.; Ross's No. 4 portable symmetrical lens, rotating stops, 6 in. focus, quite new, £3 3s.; half-plate R.R. lens by Negretti and Zambra, Waterhouse stops, works *f*/8, grand definition, covers well, fitted Optimus patent plunge shutter for time and instantaneous, finest condition, £2 5s.; Optimus 7 by 5 rapid rectilinear lens, Waterhouse stops, works *f*/8, and fitted Optimus plunge shutter, pneumatic release, as new, 60s.; Optimus 5 by 4 rapid Euryscope lens, Waterhouse stops, works *f*/6, best condition, 50s.; Laverne's 5 by 4 rapid rectilinear detective lens, Waterhouse stops, works *f*/7, finest condition, 17s. 6d.; Wray's 5 by 4 Casket landscape lens, 5, 7½, and 10 in. focus, iris stops, condition as new, £3 15s.; 5 by 4 rapid rectilinear by Watson, Holborn, fitted iris stops, works *f*/8, movable hood, as new, 45s. On view, City Sale and Exchange Rooms, 54, Lime Street, corner Leadenhall Street, City. Second-hand apparatus bought, sold, or taken in exchange.

Quarter-plate Detective Camera, carries 12 quarter-plate sheaths, fitted with instantaneous and time shutter, and achromatic lens, and view-finders, perfect condition, accept 8s. cash; also quarter-plate rectilinear lens, with iris diaphragm, for 6s. 6d.—E. Davis, 153, St. John's Street, Clerkenwell, E.C

Handsome Mahogany Hand-camera, with three quarter-plate double backs, spirit level, time and instantaneous shutter, and achromatic lens, take 15s.; also a Taylor, Taylor, and Hobson's special quarter-plate rectilinear lens, with 5½ in. fixed focus for hand-camera work, 25s.; and 12 new quarter-plate printing frames, 3s.; two-fold pine tripod, 3s.—Captain Howard, 43, Farringdon Road, London, E.C.

Half-plate Camera, with double dark slide, mahogany body, double extension bellows, reversing back, and brass rackwork adjustment, perfect condition throughout, lowest cash price 22s. 6d.; also half-plate achromatic view lens for same, 3s. 6d.; and two-fold ash stand, 4s. 6d.—J. Haddrell, 47, Milsom Road, West Kensington, London.

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THE 61st ANNUAL EXHIBITION will Open at the POLYTECHNIC HALL, FALMOUTH, on TUESDAY, SEPTEMBER 5th, 1893, when Medals and Prizes will be awarded in Mechanics, Fine Arts, Photography, Natural History, and other Departments.

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The Amateur Photographer

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Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

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❧ Our Views. ❧

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—Our Lantern-Slide Competition—The Champion Class—Reasons for Founding same—The *Studio*—Moonlight Photographs—Mr. Saville Kent's Letter—Seaside Work.

Flotsam and Jetsam, by Anchorite.

Letters to the Editor.—North Wales (Preedy)—Eastern Counties Postal Club (Newsom)—Abingdon (Vasey)—Raglan Castle (View Finder)—Speed of Plates and Developers (Ignoramus).

Apparatus.—Scholzig's Enamel Paper—Merlini's Perfect Hand-Camera—Powell's Backing—Hunter's Little Giant Rocker—The Tourist Developing Tent—Baker's Changing Tent.

Reviews.—Traité Pratique de Photo-lithographie (Vidal)—Annuaire General de Photographie—The Great Barrier Reef of Australia.

The Photographic Convention.—Anastigmatic Aplanatism, and the Zeiss Anastigmatic Lenses (Rudolph)—Some Points in Connection with Development (Bothamley).

Articles.—The Elements of Photo-Micrography (Mikron)—Les Petit Metiers and Photography (Duchochois)—Photography and Art (Bhedwar).

Holiday Resorts.—North Yorkshire Dales (Lamley)—A Month in Switzerland (Legge).

Societies' Notes.

Societies' Fixtures.

Societies' Meetings.—Ashton—Brooklands—Devonport—East London—Exeter—Goldsmiths' Institute—Hackney—Harringay—Lincoln—North Middlesex—Staffordshire—Tunbridge Wells.

Editorial Department—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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Trade Advertisements *are received up to Tuesday morning.*

Publishing Department.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 51, Seascape and River Scenery.—Latest day, August 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, September 1st, 1893.)

We are glad to find that our idea of a champion class with regard to our Lantern-slide Competition seems to have given very general satisfaction, and we have received numerous letters expressing a wish that we would adopt this system with all our competitions. This is our intention, and we may state that all our quarterly competitions for the future, including our Photography at Home Competition, which closes on 31st inst., will be run on these lines.

This will, we trust, encourage some of our younger workers to compete in our larger competitions. We have felt for some time that the general consensus of opinion was that they were handicapped by having to compete against some of our past gold medallists.

We have received one protest against our barring lantern-slides from negatives' prints from which have previously won one of our medals, being entered in our annual Lantern-slide Competition. Possibly we may be permitted to explain that our reason for doing so was to try and work as far as possible in accord with the recommendation of the conference of judges at the P.S.G.B., and also because we hold personally that a picture is a picture no matter whether a direct print, an enlargement, or a lantern-slide, and therefore having once been medalled should not again be eligible.

The *Studio* for July contains yet another contribution to the question of "The Camera and Art," and is illustrated with five excellent process-blocks of pictures by such well-known workers as Burchett, Gay Wilkinson, Murray, and Wellington.

A correspondent at Bloemfontein, Orange Free State, has sent us a capital whole-plate view of the Government offices at the above place taken by moonlight on the 30th of May on an ordinary Ilford plate with 3½ hours' exposures.

Our correspondent says he envies his English brothers of the camera who have such advantages as valuable help and hints from their fellow-workers, whilst in the Free State almost everything has to be found out, often at great cost of material. Then he says, "Anyhow, we have a great many advantages which you have not, such as beautiful sunny days for months and delightful photographic weather."

Certainly this is an immense advantage, but lately we have been favoured with magnificent weather, and if the weather prophets speak true, we have yet more fine weather in store.

We have received an interesting letter from Mr. W. Saville Kent, the author of "The Great Barrier Reef of Australia," which we review elsewhere, and he sends us some charming little studies of owls as illustrative of the study of animal life by means of photography. We hope to be able to reproduce some of these shortly, as they are some of the most exquisite and humorous little studies we have ever seen.

Mr. Saville Kent is now hard at work in Western Australia, and hopes to be able to report on some interesting camera work shortly. We certainly think that many of our readers who will doubtless be away at the seaside this year might do worse than try and get up a series of negatives showing a little seaweed and marine life.

There are difficulties to be overcome, of course, but if the camera is arranged to point down—and this can be easily arranged by having a hinged tripod top—there are always innumerable little pools amongst the rocks where seaweeds and small crabs, anemones, etc., may be found, and that such work is possible with excellent results, Mr. Saville Kent's great work proves.

Flotsam and Jetsam.

It was a little curious that, to illustrate the truth of the remarks made in this column last week on the debt the illustrated journals owe to the camera, the *Westminster Budget* should have come out on Friday with "A Pictorial Story of the Royal Wedding, told by the faithful camera." Here is indeed an open and a handsome acknowledgment of the debt.

It is needless to add that as a *raconteur* "the faithful camera" easily scores over its competitors. The reproductions of photographs of the scenes along the line of route all bear the unmistakable stamp of reality, and put sadly to shame the artificial productions which used once to be all the rage, and have not died out yet. They must have been energetic and enterprising people who managed to secure such good exposures on such a day and under such circumstances.

Evidently in some instances the roofs of houses had been climbed, while in every case the moment of exposure was most happily and judiciously chosen. Taken all round, the faithful camera's account of the day is far and away better than any other, and much more interesting. For instance, in the imaginative sketches in which many journals indulged, some amusing discrepancies appeared, if one took the pains to make comparisons.

The bride's dress varied vastly in the different pictures, and so did the whole composition of the group in the chapel; while some of the representations of the wedding breakfast were totally inconsistent with the photograph taken beforehand of the apartment at Buckingham Palace wherein it took place. From all which it will be seen that the camera deserves the epithet "faithful," and its competitors—but it would never do to use unparliamentary language.

The Kodak enjoyed itself immensely just lately in Lord Aberdeen's well-known grounds at Dollis Hill, where Mr. Gladstone is not unknown. The little London contributors to that delightful magazine *Wee Willie Winkie* gathered there on the invitation of Lord and Lady Aberdeen, and the garden party proved a charmingly successful affair.

Lord Aberdeen is one of the innumerable devotees of the camera, and his Kodak was busy during the afternoon. It must have been a congenial occupation taking snap-shots at the little ones here and there in the hay, for haymaking was the order of the day.

By the bye, the *Strand*, which has now gone in for a series of "Child Beauties," might make a better selection. We are prepared to contend, even in the face of their mothers, that the children whose portraits are given in the July number are not the best specimens of youthful beauty to be found. There are exceptions, of course, but the general standard is not as high as it should be.

News of quite a revolutionary invention comes from that fruitful source of marvels, America. The proverb of the ancients, *ex Africa semper aliquid novi*, needs to be altered in our day, and America substituted. The latest discovery is of the possibility of lithographing a picture containing as many as eighteen colours by not more than three impressions.

This is an enormous advance, for hitherto each colour has necessitated a fresh impression. The inventor, it seems, is a Canadian, but a New York syndicate has acquired the right to develop it, and as it will necessarily affect every lithographic business in the world the right is a most valuable one. Further details of the discovery will doubtless be forthcoming soon and will be eagerly awaited.

Over and over again in this column has the necessity of carefulness and deliberation in picture-making been dilated upon, and so it is good to see that the same lesson was urged in Mr. Guardia's paper on "Artistic Expression with the Hand-camera" at the Plymouth Convention. There is much in that paper that every photographer who desires to produce artistic work should bear in mind. For such, *festina lente* is a motto that should never be forgotten. Anchorite.

Letters to the Editor.

N. WALES.

Sir,—With your permission I should like to endorse the statement made by F. O. Pickard concerning the steamer which plies between Deganwy and Trefriw, mentioning that sometimes the steamer does not start from Deganwy on account of the lowness of the tides; in that case it starts direct from Conway, but then it seldom reaches Trefriw. The starting times are always published. Mr. J. E. Jones, grocer, Deganwy, has a time-table in his shop. I have been to Deganwy four years running, so know a little about it and its surroundings.—Yours, etc., Digby H. W. Preedy.

P.S.—Perhaps some of your readers would be interested to know that Deganwy is the Welsh for "white waves breaking on the shore."

* * * *

EASTERN COUNTIES POSTAL CLUB.

Sir,—Will you kindly allow me a little space in your valuable paper to call the attention of amateurs residing in the Eastern Counties to the postal section of the Fakenham District Camera Club.

A limited number of workers in the counties of Cambridgeshire, Lincolnshire, Norfolk, and Suffolk are invited to join the above section. Particulars upon application to—yours truly,

Harry Newsom (*Hon. Sec.*)

The Square, Fakenham, Norfolk.

* * * *

ABINGDON.

Sir,—For the benefit of yourself and your readers, I beg to inform you that neither of the persons you mention in your "Annual" are in business in Abingdon, and the only shop where plates, etc., can now be obtained is at my address.—Yours, etc., W. J. Vasey.

11, Broad Street, Abingdon.

* * * *

RAGLAN CASTLE.

Sir,—Last week I went to Raglan in Monmouthshire for the purpose of photographing the fine old ruined castle. On arriving at the castle enclosure I found that in addition to an entrance fee of

sixpence, *half-a-crown extra* for the privilege of photographing was demanded of me. I told the person in charge that it was an exorbitant amount to pay, but he denied this, stating that having photographs himself for disposal he had lost the sale of them (so *he* said) through so many amateurs coming to the place, and remarked, "People, instead of buying my photos, now take them for themselves." This seemed so absurd that I pointed out to him that not one person in a hundred was a photographer, taking the population of the country, but all argument was useless, as he only referred me to a notice board, on which was painted, "Amateur photographers wishing to take photographs of the Castle, can do so upon payment of 2s. 6d. Professional photographers, 21s."

Although I had undergone a hot and tedious journey, the light was perfect, and I had come especially to photograph, I determined not to do so, and I hope my example will be followed by others, so that this deliberate system of blackmail may not be encouraged.—Yours faithfully, VIEW-FINDER.

* * * *

SPEED OF PLATES AND DEVELOPERS.

SIR,—I have of late frequently seen it stated in the advertisement and other columns of the photographic journals that the use of certain developers permits of a reduction in the time of exposure varying from one-third to one-half. The truth of this statement has been hardly less frequently denied by men at whose feet we of the *profanum vulgus* are wont to sit with respect.

Is it not possible that there may be, as usual, a certain amount of truth on both sides? So far as I can understand the argument it is as follows:—Under given conditions of plate and light there is a certain minimum exposure required in order to allow the light reflected from the faintest details in the shadows of the object photographed to impress themselves on the plate, and whatever the developer employed, this minimum exposure cannot be shortened without loss of detail. Provided not less than this minimum exposure be given *and that the plate receives proper treatment*, it is practically immaterial what developer is employed. With this I entirely agree.

On the other hand, assuming that the normal exposure for a given plate *which it is proposed to develop with a normal pyro-developer* is one second, I am inclined to think that under the same conditions a practically identical negative may be obtained with an exposure of one-half or two-thirds of a second if a *normal* metol or amidol developer be used.

The fact is, that under and over exposure are merely relative terms, and what would with pyro be a case of under-exposure, and as such require special treatment in order to secure a good negative, is, with metol or amidol, a normal exposure requiring nothing more than normal treatment in order to produce a similar result.

My own experience is that if the exposure is to be adapted to a fixed normal developer, metol and amidol not merely permit but absolutely require shorter exposures than either pyro or hydroquinone, but that if the development is to be modified to meet the requirements of each case, and sufficient skill and patience be forthcoming on the part of the operator, the exposure may be the same for all four.—Yours faithfully, IGNORAMUS.

Apparatus.

SCHOLZIG'S ENAMEL PAPER.

OTTO SCHOLZIG, of 31, Binfield Road, Clapham, has forwarded us a sample of the above, which he has introduced in order to enable those photographers who prefer to sensitise their own paper, to be able to do so, and yet obtain all the effect of the gelatino-chloride printing-out papers.

The formulæ recommended are:—

SENSITISING BATH.

Nitrate of silver	1 oz.
Water	8 ,,

Float two minutes.

TONING.

Purple Tones.

Borax	6 drm.
Water	2 pints.
Gold	6 gr.

Black Tones.

Sulphocyanide of ammonium	6 drm.
Water	2 pints.
Gold	6 gr.

FIXING.

Hypo	3 oz.
Water	1 pint.

Immerse for ten minutes; keep moving.

In our hands this has yielded excellent results. The surface is excellent, and it is easy to work, and one has the power of adjusting its printing qualities to suit all classes of negatives by alteration of the strength of sensitising bath, which is a great help to practical workers. Mr. Scholzig informs us that in consequence of the unprecedented demand for the white enamel paper, he is just now unable to keep pace with the demand, and therefore craves the kindly indulgence of those who may not receive their orders so quickly as they desire.

MERLINI'S PERFECT HAND-CAMERA.

P. MERLINI, of 34, Red Lion Street, Clerkenwell, has submitted to us his latest form of hand-camera, which can be used either in the hand or on a stand. It is a neat black wood box, measuring $10\frac{1}{2}$ by $7\frac{1}{2}$ by $5\frac{1}{2}$ in., which weighs about $4\frac{1}{2}$ lbs., including slides. It has an improved box front with two finders, and a Thornton-Pickard roller-blind shutter. The focussing is effected by a milled head at the back of the camera, where a small door lets down so as to expose the focussing screen. The camera is fitted with rising and cross fronts, swing back and two bushes and tripod screen, so that it can be used for all-round work on a stand. The slides are either of solid book form with a little piece to slip out at the bottom, through which the plates are placed in position, or the single slides which are exceptionally neat and light, and are thoroughly well made of mahogany with pull-out shutters; these may be fitted to any camera at 3s. 3d. each. The camera with slides, two finders, lens and shutter complete and improved form costs £5 5s., but with the old simple front £4 10s. The camera is thoroughly well made, and for those who want a reliable hand and stand camera it is all that can be desired.





POWELL'S CARAMEL AND SIENNA BACKING.

MR. T. H. Powell, of 116, Denmark Hill, London, S.E., has sent us a sample of the above, which he is now placing on the market. It is sent out in neat tins, which do not allow any of the backing to escape if accidentally turned upside down in travelling. The backing is applied with a camel's-hair brush without any difficulty, and dries very quickly, for we found in backing a dozen plates by the time we had finished the twelfth the first was quite dry enough to go in the dark-slide. Mr. Powell suggests using a piece of fairly thin paper, cut to size,

and placed on the backing when spread on the plate, and this entirely obviates any trouble of drying, as the backed plate may be immediately put in the slide. This should be used by every practical worker.

HUNTER'S LITTLE GIANT ROCKER.

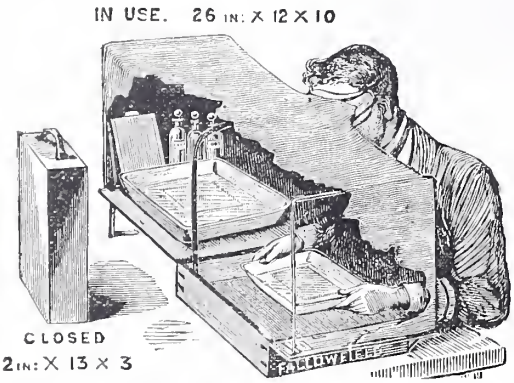
Hunter and Co., of East Down Works, Lewisham, S.E., have sent us one of the above, which is certainly a very useful adjunct to any practical worker's dark-room. The rocking movement is very analogous to that given by the hand, and a variety of motions may be given to the dish by placing it in different positions on the rocker, which is actuated by a spring which is wound up by the handle shown, whilst a button enables one to stop or start the motion.



We can thoroughly recommend this as a great improvement on the old see-saw rocker; its power considering its size is decidedly good, as the one we have tried will easily work a 12 by 10 dish. Price 17s. 6d.

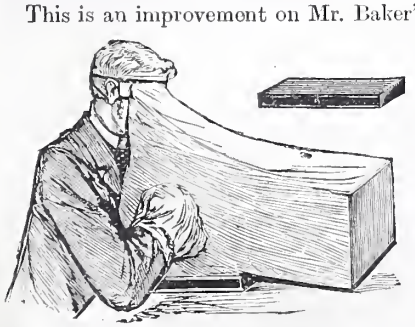
THE TOURIST'S DEVELOPING TENT.

Mr. W. R. Baker, of Wallington, Surrey, has submitted this convenient arrangement to us for notice. By means of this the tourist is absolutely independent of any dark-room. In this he can back, change, or develop his plates with perfect safety and with plenty of room. The body of the tent is made of opaque material with a window at one end, and the amount of light passing through this can be regulated at will by an interior blind. Another advantage is that the mouth and nose of the operator are quite unencumbered, and therefore there is no fear of asphyxiation or stifling by heat in using the same. It is a well-thought-out and practical contrivance. Price £1 11s. 6d.



BAKER'S CHANGING TENT.

This is an improvement on Mr. Baker's well-known changing bag, in that it is a changing bag fitted with a tin and wire support, which prevents the material from falling on the hands. It is small and compact when closed, and yet gives ample room to change plates with perfect ease and safety, the light being regulated by an adjustable blind inside. Price 12s. 6d



Reviews.

Traité Pratique de Photo-Lithographie. By Léon Vidal. Gauthier-Villars et Fils, 55, Quai des Grands-Augustins, Paris. Price, 6fr. 50c.

In this work we find not only an exhaustive treatise on photo-lithography, but also photo-zincography and collotype, and the principal methods of engraving on wood and metal. M. Vidal is a specialist in these particular branches of work, and is therefore capable of writing what should be a standard handbook on these subjects, and well he has performed his task in the volume before us. Not content with giving us one particular method of working, he has collated the methods of the highest authorities, and added practical notes of his own. The book is illustrated with numerous diagrams and specimens of the various processes, and we shall look forward with some interest to the appearance of the other two volumes which M. Vidal promises.

Annuaire General de la Photographie, publie sous les auspices de l'Union Internationale de Photographie. Published by E. Plon, Nourrit et Cie., and Gauthier-Villars et Fils, 55, Quai des Grands-Augustins, Paris. Price, 4fr. 50c.

This is a handsome volume published by the International Union of Photography, and edited by a committee, of 670 pages of text with figures, and ten full-page illustrations in collotype and photogravure.

The book is divided into four parts, the first containing the official regulations and documents of the Union, lists of the members and the members of French societies, of photographic journals, dark-rooms, and numerous formulæ and tables. The second part is devoted to the advances made in photography during the past year by such well-known specialists as Wallon, Mathet, Reeb, Mercier, Balagny, Pector, Lippmann, Gravier, and Vidal. The third part is devoted to notices of novelties in apparatus under the editorship of Bourgeois, Marechal, and Fleury-Hermagis. The fourth part contains a directory of professional photographers and French dealers.

This is the best annual yet published in France.

The Great Barrier Reef of Australia, its Products and Potentialities. By W. Saville-Kent, F.L.S., F.Z.S. W. H. Allen and Co., 13, Waterloo Place, S.W. Price, £4 4s.

Probably of all works yet illustrated by photography, this is at once the most sumptuous and the strongest testimony as to the value of photography for such purposes. It contains no less than forty-eight capital collotypes, which it need hardly be said reproduce with a fidelity and accuracy unattainable by any other process. The collotypes, are in most cases 10 by 8, but in some cases two smaller ones are included on one page. Besides these there are also sixteen chromo-lithos, which are simply startling on account of the gorgeous colours of the corals, bêche-de-mer, fishes, and other submarine creatures represented.

The author, so well known for his work on Infusoria, treats his subjects in a masterly manner, discussing first of all "Coral Reefs, their General Structure and Theories of Origin," and from a careful perusal of this chapter with the subsequent one which treats directly of "The Australian Great Barrier Reef," it is easy to see that Mr. Saville-Kent is a believer in Darwin's subsidence theory, which is so ably set out in the latter's well-known work on "The Structure and Distribution of Coral-reefs." "Corals and Coral-animals" are next described; "Pearl and Pearlshell Fisheries," "Bêche-de-mer Fisheries," "Oyster and Oyster Fisheries of Queensland," "Food and Fancy Fishes," and "Potentialities," are treated in turn, and in the last chapter the author makes some valuable suggestions for the utilisation of the varied fish fauna of the great reef and its waters.

The work will take rank as one of the finest yet illustrated by photography, and it does credit not only to the author and publishers, but also to the London Stereoscopic Company, who have produced the collotypes, and Riddle and Couchman, who printed the chromo-lithos.

The Photographic Convention.

(*Continued from page* 32.)

AFTER the reading of Mr. Fry's paper there was a brief recess for dinner, etc., and the members assembled at the Town Hall, Devonport, where they were met by the Mayor, Alderman W. Waycott, who entertained them, and an exhibition of slides by Mr. Coombs, of Devonport, and Mr. Keene, of Derby, was followed by extremely interesting slides from the Marine Biological Laboratory at Plymouth, which were capitally described by Mr. Cunningham, illustrating the development of crabs, soles, and jelly-fish, etc. Papers by Messrs. Pringle and Rudolph were to have been read, but in their absence Dr. Rudolph's paper was taken as read.

ANASTIGMATIC APLANATISM AND THE ZEISS ANASTIGMATIC LENSES.

BY DR. PAUL RUDOLPH (Jena).

(Trans'ated from the German MS.)

The anastigmatic lenses of Zeiss made their first appearance scarcely two years ago; nevertheless they have attracted the general attention of the photographic world, and, despite considerable adverse criticism, proved a great success. It would, therefore, be interesting to examine the special features to which these new objectives owe their popularity.

Over 7,000 lenses have now been sold, and though there are still many professional photographers and amateurs who have not had an opportunity of testing the powers of the anastigmatic lenses from personal experience, it may be assumed that nearly everyone has heard of them or has seen photographs produced by them. The Zeiss anastigmatic lenses are well adapted for portraits and groups, for copying and enlarging, for interiors and flashlight exposures, and for outdoor instantaneous photography, for architecture, landscape, and photogrammetric work.

Experts unanimously pronounce the Zeiss anastigmatic lenses to be superior to the older objectives, and praise their extensive range of applicability. We may refer to the respective writings of Koster, Faber, Wallon, Eder, Vogel, and others.

The following remarks are based upon the criticism of these experts, and, in particular, upon a paper read by me in March, 1892, in the Free Photographie Association of Berlin.*

The Zeiss anastigmatic lenses are dissymetrical doublets, consisting of an achromatic anterior part whose *flint* has the higher refractive index, and an achromatic posterior part in which the *crown* has the higher refractive index. These two cemented parts of the doublet possess, therefore, opposite differences of refractiveness in the crown and flint glasses employed for achromatisation.† This embodies the important principle by which it became possible to effect anastigmatic aplanatism of a system of lenses corrected spherically and chromatically for large apertures.

The series of new glasses produced about six years ago by the glass works of Messrs. Schott and Co., of Jena, rendered it possible to practically realise this principle in the construction of the Zeiss anastigmatic lenses.

Let n_f, n_c, n_d be the refractive indices of a certain glass corresponding to Fraunhofer's lines, F, C, and D, then the ratio $\frac{n_f n_c}{n_d 1}$ represents the relative dispersion for the interval C-F. With the older series of glasses this value increased in a measure as the refractive index increased, *e.g.*,

$$\text{Crown of } n_d = 1{\cdot}5166 \text{ had } \frac{n_f - n_c}{n_d - 1} = 0\,01643.$$

$$\text{Flint of } n_d = 1{\cdot}6129 \text{ had } \frac{n_f 1 - n_c 1}{n_d - 1} = 0{\cdot}02708.$$

In order that the anastigmats may be constructed, it is, however, necessary a range of glasses in which any given refractive index may be coupled with any desired dispersion. This postulate is realised, *e.g.*, by the following glasses made by Messrs. Schott and Company.

The sodium lead glass, flint $n_d 1 = 1{\cdot}5205$ of relative dispersion, 0·01956.

The barium-silicate glass, crown $n_d = 1{\cdot}6112$ of relative dispersion, 0·01747.

The refractive index of the former, viz., 1·5205, would, in the older series of glasses, necessarily imply a relative dispersion of 0·01700, while to obtain a refractive index of 1·6112 with the other glasses the relative dispersion would have to be about 0·02700, *i.e.*, sixty per cent. higher.*

All photographic lenses preceding the anastigmats had either a very much curved field, or, if flat, an astigmatic field. In the latter case the image was perfect in the centre, but the quality of the image declined towards the edge.

It may be useful here to define what is meant by a curved, flat, and astigmatic image.

Let the object be placed in a plane which is accurately vertical to the axis of the objective, or let all the object be at so great a distance from the objective as compared with the focal length of the objective, that the difference of the distances of the different objects may be neglected. Then *the field of an objective* is considered to be *curved* if different positions of the focussing screen are required for *sharply* focussing an object point in the axis (centre of the image), and an object point lying outside the centre of the image.

The whole of the older photographic lens types exhibit curvatures of the image, such as necessitate the distance of the focussing screen being shorter for marginal points of the image than for axial points. The points of distinct delineation are, therefore, situated upon a curved surface, whose concave side is presented to the objective. Fig. 1 represents a sections of the image surface, and a plane passing the axis of the objective. The dotted line *a* represents the ideal image plane, which intersects the axis in the axial image point, and is at right angles to the axis of the objective, while curve *b* represents the actual surface of the image.

The *field* is *flat* if the position of the *focussing sereen* is *the same* for central and extra-axial points, *i.e.*, if the sharply focussed points are all contained in a plane which is at right angles to the axis of the objective, or if these points lie in the ideal plane of the image.

The image is *astigmatic* if sharp images of *lateral*, *i.e.*, extra-axial, *points* may be obtained by *two different* positions of the focussing screen. The two images are not exactly similar to the object; one of them shows distortion in the direction radiating from the axis (radial distortion), while the other exhibits distortions in the directions at right angles to the radii (tangential distortion). This fact may easily be demonstrated by means of an "aplanatic" lens, say, by using a small circular disc, having a diameter of only a few millimetres, situated *outside* the axis, and attempting to sharply focus it. With the nearer position of the focussing screen, the image of the disc appears as a radial line of a breadth proportional to the diameter of the disc. With the longer distance of the screen, the image is an arc of a circle concentric to the axis of the objective (tangential distortion). The lengths of the radial and tangential portions of a line are essentially dependent upon the difference of the two positions of the screen, and increase continuously from centre to margin in the case of the "aplanatic" lens. With objectives yielding astigmatic images there are thus two image surfaces conjugate to one and the same object plane. These two image surfaces touch each other in the axial image point, and the distance between them increases continuously from centre to margin. "Mean curvature" may be defined as that surface which represents the arithmetical mean of the deviations of the two image surfaces from the ideal surface. The dissimilarity between the details in the two image surfaces *inter se*, and the original increases from the centre to the margin. The following is an interesting experiment:—

Arrange in one plane (fig. 2), along the radii of concentric circles, bright discs. The angles between the radii should be chosen according to the astigmatic aberrations and the focus of the objective. Diroct the axis of the objective at right angles towards the centre of the system of radially grouped discs, and focus one of extra-axial discs. The image obtained at the shorter distance of the focussing screen from the objective, as fig. 3 shows, a portion of a radial line which, in proportion to the curvature of the image plane, becomes more and more indistinct towards either side, and is more or less interrupted radially in proportion to the degree of astigmatic deviation. Fig. 4 is an image obtained by focussing a disc on a circle, situated midway between the axis and the outside circle. It will be seen

* *Photogr. Wochenblatt*, Berlin, 1892, Nos. 18 to 21.

† "Crown" and "Flint" are here placed in opposition, not with respect to their chemical composition, but are considered with respect to their *optical properties*. The same glass may, therefore, appear in two different achromatic combinations as lensee, either as "Crown" or "Flint" (*vide* Eder's *Jahrb.*, 1891, p. 221, Rem.). In the following remarks "Crown glass" is always understood to refer to that glass of a binary lens, which is less in *relative* dispersion, while the term "Flint glass" refers to that glass which has the greater *relative* dispersive power. Relative dispersion is the value represented by the expression $\frac{\Delta n}{n-1}$, Δn being the difference of the refractive indices for two lines of the spectrum, as a refractive index within these limits.

* Refractive and dispersive power was, with the older glasses, dependent upon each other in a certain manner. If n_d and $\Delta\ n = n_f + n_c$ were respectively made to represent abscissæ and ordinates, the points so represented formed a fairly straight line incline to the axis (*vide* Dr. J. Czapski, "Optical Lenses," *Zeitschrift fuer Instrumentenkunde*. Berlin, 1886, pp. 344 and 345) n_d was, therefore, a linear function of Δn or—

$$n_d = a + C\ \Delta n$$

that images of all the discs grouped along the same circle are of the same degree of distinctness or indistinctness, and also exhibit the same amount of distortion.

Focussing at the greater distance of the screen shows the object fig, 2 tangentially distorted. The image becomes thus composed of a series of circles concentric to the centre of the image, which are more or less interrupted, or perfectly uninterrupted. The discs gronped along another circle, which had not been sharply focussed, are similarly distorted, though in a less marked degree.

If, now, a screen having drawn upon it concentric to the axis of the objective circles and radii be substituted for the system of discs, the astigmatic objective wonld reproduce the original with partial similarity, hut both systems of lines could *not simultaneously* be delineated with the same position of the screen. The shorter distance wonld yield sharpness of the radial elements, the circles at the same time heing badly defined; the longer distance would show the circles sharply, and at the same time the radial elements badly defined.

A sufficiently large screen bearing the two systems of lines, radial and concentric circular lines, appears thus to form the most natural test for astigmatism. Such a screen would, however, be too uniform and too little adapted for exhaustive tests.

The screen of 2 hy 2 metre area, as it is used in the photographic laboratory of Carl Zeiss, of Jena, is for this reason arranged somewhat differently, and it may not be uninteresting to here give a short description of it. Upon strips of paper of 18 by 21 in area two systems crossing each other at right angles of parallel lines of varying thickness, and placed at varying distance from each other, and the strips themselves are fixed to the screen with one of their ends at the centre of the screen, and their sides parallel to the sides of the screen in such a manner that in each strip the radial and tangential lines alternate. The middle of the screen contains a field consisting of rectangular cross lines, which is intended for testing sharpness of definition. The tangential parallels form substitutes for the system of concentric circles, while the radial parallel lines take the place of the radii proceeding from the centre. The difference between the two positions of the focussing screen for sharp delineation of the marginal portions of the systems of straight lines represents the astigmatic difference. For the purpose of demonstrating the incorrectness of the image caused by astigmatism, the screen has square fields of more or less fine rectangular cross lines diagonally attached to it in such a manner that in one case the system of lines is parallel and at right angles respectively to the diagonal, while in the other case they are inclined at 45 deg. to the diagonal. The screen has also samples of writing and printing attached to it.

When focussing square cross lines at the edge of the image, the astigmatic objective produced in the two characteristic cases furnished by the test screen the following deformations:—

1. The straight lines composing the net at the edge of the image are parallel and at right angles respectively to the direction of the radial lines.

In this case—represented by fig. 5, in which A is the point of intersection of the axis of the objective and the plane of the object, A that of the axis and the plane of the image—sharp focussing of the tangential lines causes the lines which are at right angles to the radius to appear nearly sharp, while the lines which are parallel to the radius are almost entirely invisible (image *a*). Focussing of the radial lines produces the converse of the last test. The lines parallel to the radius appear sharp, the lines at right angles to it disappear (image *b*). Mean focussing results in a totally ill-defined image, and eventually in a more or less marked reversion of the cross lines, such as a black net in a white field.

2. The straight lines of the net are inclined at 45 deg. to the radial direction. In fig. 6 let A and A′ again be the point of intersection of the objective axis with the plane of the object and image respectively. Tangential focussing causes the rectangular cross lines to be distorted so as to present the appearance of tangentially elongated hexagons, and, in the case of great astigmatic difference, it may result in almost precise commntation of the cross lines into a *single* system of tangential lines (image *a*, fig. 6).

If we focus between these two limits, the net may, similarly as above, eventually be reversed so as to appear as black points in a white field; the same effect may also be produced in anastigmatic images by unsharp focussing. Similar results of a more or less marked character may be obtained by replacing the qnadratic net by one formed of oblongs, rhombi, circles, etc.

In order that these relations might be objectively fixed, photographs were taken in the photographic laboratory of the optical works of Carl Zeiss of the test screen, and the photographs so obtained were reproduced by photo-lithography. There are four plates, of which are reproduced the two most characteristic ones, Nos. I. and IV. Here an "aplanat" and "anastigmat" are subjected to direct comparison. Plate I. has been taken with an "aplanat," made by a renowned firm. The objective had a focal distance of 14 cm. and a relative aperture of 1·6, and was stopped down to *f*-12·5. Image and object are in the ratio of 75 to 1,000, and the angle subtended by the object is about 67 deg.

The centre of the screen is sharply focussed. In this part the delineation is extremely good, a sufficient proof that the objective, *per se*, was a good specimen of its kind. As the margin is approached, the definition, however, loses more and more in distinctness, and astigmatic distortion increases more and more. While the tangential lines are fairly sharp up to the edge, the radial lines rapidly decreasc in definition past the third field. In the diagonal squares, the bounding lines of which are at right angles and parallel respectively to the radius, it will be noticed that the tangential lines are markedly sharper than the radial lines, the latter being almost invisible, and in the squares, whose sides are inclined at 45 deg. to the radial direction, the distortion at the margin of the tangential lines may readily be observed. The squares appear, in fact, as hexagons.

Plate IV. has been taken with a Zeiss anastigmat, viz., anastigmat 1-6·3, 14 cm. focus, all other conditions being the same as those existing in the former case. There, too, the centre was accurately focussed; but barely any traces of those details which point to astigmatic imperfections of the margin of the image will be noticed.

Plates II. and III., which are not shown here, were taken with the same "aplanat" as that used for Plate I. In the first case the tangential marginal lines were focussed, in the second case the marginal radial lines formed the critical part of the object. While in the former case the centre appeared to be fairly sharp, in the latter case it was totally worthless. The characteristics of astigmatism, as above explained, become apparent in both plates.

The older types of lenses (aplanatic, antiplanats, portrait lenses, single lenses, etc.) admitted of astigmatic correction, but they could not at the same time be corrected for flatness of field. The Zeiss "anastigmat" was the first lens in which, as we pointed out, anastigmatic aplanatism was combined with the realisation of other requisites of a good photographic lens.

A lens having *anastigmatic curvature* yields sharply defined points from centre to margin. These cannot, however, simultaneously be fixed upon the *plane* negative plate of the photographic apparatus whenever the points constituting the object are nearly in one plane at right angles to the axis, or when they are at a relatively great distance from the objective. If it be desired to simultaneously fix these sharp points upon the plate, it would be necessary to use a *curved sensitive surface* corresponding to the curvature of the image. Clearly the use of such curved sensitive strata is impossible, for it must be forgotten that for each lens type, each focal length, and even each degree of magnification or reduction, there is a distinct corresponding curvature, to say nothing of the practical inconvenience attaching to curved photographic plates. At present we are, at any rate, limited to flat negative plates. From an optical point of view, this is an undesirable limitation, which seriously affects definition and depth of the curved image.

The flat plate must be covered nearly uniformly sharply from centre to edge, unless the objects are grouped on a curved surface corresponding to the curvature of the image. With portrait groups photographers had a means of compensating the anomaly by arranging the persons in a semicircle, in the centre of which the objective is placed. With landscape and instantaneous photographs, however, such an expedient is only rarely, if at all, applicable. In order to obtain tolerable distinctness in the image from centre to edge, it would be necessary to work with narrow angles or to stop the lenses down considerably.

In working in this manner, it must be borne in mind that both in the centre and at the edge near the far objects are to be depicted simultaneously; the objective yielding a curved image causes, however, on the photographic plate distinct objects to appear indistinct, and sufficiently near objects sharp at the edge when the focussing is sharp for the centre. On the *oblong* flat negative plate, A B C D (fig. 7), let near objects be depicted at AB, distinct objects at CD; then, if the *centre*, M, be accurately focussed, the points of sharp delineation are situated upon a curve, and are represented by E, which intersects A B in two points, and is symmetrical with respect to A B. By stopping the lens down we obtain, as is well known, greater depth for distant objects than when focussing for near objects. In the present case the depth necessarily diminishes, therefore, from the centre to the margin. The limits may be graphically represented by curves, T_1 and T_2, which, being symmetrical with respect to E, have their greatest distance apart at M. The depth of focus is represented by the area contained between T_1 and T_2. By this area the imperfections of the marginal image may readily be ascertained. When it is important to improve the

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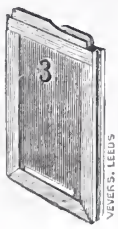
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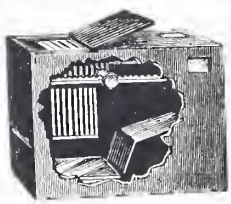
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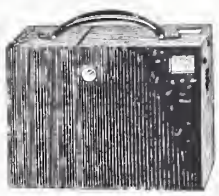
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distinctness at the edge, it would be necessary to sharply focus a point situated at a distance from the centre, and to sacrifice the distinctness at the centre.

The deficient depth of focus of lens yielding a curved image does, under certain conditions, not become apparent in street scenes. In such cases it may happen that the position of the camera is such that the rows of houses are delineated simultaneously on both sides of the street, the distant houses being thus shown in the centre, the near ones at the edges of the plate. In such a case the curvature of the image may even become the very cause of greater marginal distinctness than is obtainable with the flat field. With all other, and nearly always existing, cases distant objects have to be shown simultaneously at centre and edge, and in such cases it is absolutely necessary to have a flat field.

It is possible to partly flatten the field of the aplanat. This is most conveniently done with those points of the image which are due to the meridional rays, *i.e*, for the tangential directions in the image. Under these circumstances, one would, however, have to abandon the anastigmatic correction of the image, and to rest content with partial distinctness. Those points of the image which are due to rays contained in a sagittal section yield another image surface (image points of radial directions), which touches the former surface in the axis of the objective, and deviates from it with continuous curvatnre towards the edge, as already explained.

With angles of 50 deg. this deviation amounts to one-fifteenth ; with 70 deg., to one-sixth ; and to 90 deg., even nearly one-third of the foeal length of the lens. The section of these image surfaces by a plane passing through the axis of the lens would present the appearance shown in fig. 8. Curve *a* appertains to the image points in the meridional section (tangential distortion), *b* to those of the sagittal section (radial distortion). H_0 represents the axis of the lens H_n a principal ray.

This resnlt may be obtained with aplanatic lenses if their halves be sufficiently widely separated. The marginal distinctness is then very defective, and the stopping down has to be carried very far if it is at all desired to obtain sharp definition at the edge or fair definition extending over a considerable field.

An objective having an anastigmatically flat field, such as the "anastigmatic," produces, however, a sharp image upon the flat plate, which, as fig. 9 shows, is bounded by lines T_1, T_2, the latter being parallel to the focussing line E. This objective delineates near and distant objects with the desired uniform sharpness and centre at edge.

The Zeiss anastigmats yield, therefore, a uniform depth of focus from centre to margin without necessitating the same amount of stopping down that is imperative with the "aplanats." *The anastigmats have in proportion to their covering power a considerable relative rapidity.*

A paper read by the author in the Free Photographic Association at Berlin was accompanied by two instantaneons photographs reproduced by the lithographic process, which served for comparing the "anastigmat" with a normally corrected "aplanat." The two lenses used in the tests had the same maximum aperture, and were stopped down to 1-9. The anastigmat 1·6·3, f=21 cm., gave a circle of 25½ cm. diameter of fair definition (62½ deg.), while with the aplanat 1-6 of 20 cm. focus stopped down to 4-9 the same circle of 11 cm. at most (31 deg.). The aplanat,* which was the make of a renowned firm, was in itself a good specimen, the definition being excellent in the centre.

In order to obtain with the aplanat a sharp image of the same extension it would have been necessary to stop the lens down to about f-36, and thns to seriously diminish its rapidity.

Professor Roster, of Florence, who, in his own interest, subjected the anastigmats to exhaustive practical tests, found that the anastigmats, with a given angle, admit of five to eight times more rapid exposures than aplanats and antiplanats of best make.

Dr. Chiusoli, of Ravenna, speaks equally favourable of the anastigmats, and Professor Fabre, of Toulouse, writes, in his *Aide-memoire* of 1891, "The anastigmat is eleven times more rapid than the comparable objectives of older types."

The anthor himself compared an anastigmat 1·6·3 f=170 mm, with an excellent specimen of the *aplanat* 1-9, f=145 mm., and found that the *anastigmat* covered the test screen of Zeiss with almost the same degree of definition that could be obtained with the *aplanat* working at f-32, *i.e*., the anastigmat working at 1·6·3 with a *twelve times greater rapidity* than the aplanat 1-9 was found to do the same as the latter. Owing to the better concentration of light in the anastigmatic flat image, as compared with the anastigmatic curved or astigmatic flat image, with an objective of the former type, the intensity necessarily diminishes less from centre to edge than a lens belonging to either of the last-named types. This advantage of the Zeiss anastigmats cannot be overrated, as the oblique incidence of rays at the edge of the image is, in itself, productive of a continuous diminution of intensity towards the edge. The anastigmats yield a negative which is *uniformly exposed* from centre to margin. The advantages resulting from the anastigmatic flatness of field greatly extend the range of applicability of these lenses.

The advantage of being permitted to use a large stop when a certain size of plate is prescribed, and the advantage of the uniformly bright field, assists in the solution of the problem of using short-focus lenses for relatively large plates ; *i.e*., with a given rapidity of the objective, essentially shorter foci may be used in the case of anastigmatic lenses than is admissible with other types, *e.g*., anistigmat 1·6·3 (Series II.), of a focus of 105 to 120 mm. is *quite* sufficient for sharply covering a plate 9 by 12 cm. (3½ by 5 inches) at f·9 ; with the older types, the focus would have to be 120 mm. (7⅓ inches) at least. In order to cover 13 by 18 cm. 5 by (7 inches) at f-9, it was necessary to employ a lens of, say, 350 mm. (14 inches) focus, whereas, with the anastigmats, this result may be obtained with a focus of 210 mm. (8½ inches), and even with 170 mm. (7 inches), Short foci give, however, at equal distances of the object, a better depth than long foci; they yield a sharper image of objects situate at *different* distances from the position of the apparatus. The anastigmatic lenses have, therefore, in another sense, greater depth of focus than the older lenses.

These advantages become partieularly apparent in instantaneous and wide-angle lenses, and in the photography of architecture and interiors, and in copying. Detective cameras may be made of smaller dimensions, as they may be fitted with short-focus lenses. Photographs of architecture and interiors, and reproductions of maps and paintings, may be taken by means of rapid lenses, *i.e*., at short exposnres.

The tables published by the author in *Eder's Jahrbuch*, of 1893, in his paper on "The Astigmatism of Photographic Lenses," which are based upon calculation, show the extent to which anastigmatic flatness has been obtained with the *various* series of the anastigmats.

TABLE I.

Mean Deviations of Image Curvature for Objectives at 100 mm. Focus.

Objectives.	Deviations for Inclinations of a Principal Ray of—						
	10°.	15°.	20°.	25°.	30°.	35°.	40°.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Anastigm 1-18 (Long foci) ...	−0·2	−0·4	−0·5	−0·2	+0·3	—	—
Anastigm 1-9 ...	−0·5	−0·9	−1·2	−1·0	−0·6	+0·4	+2·4
Anastigm 1-6·3 ...	−0·3	−0·5	−0·6	−0·3	+0·8	+2·4	—
Anastigm 1-12·5..	−0·6	−1·1	−1·4	−1·4	−1·0	+0·2	—
Anastigm 1-4·5 ...	−0·5	−1·0	−1·1	−1·5	−0·6	+1·3	—
Anastigm 1-7·2 ...	−0·7	−1·2	−1·3	−1·2	−0·2	+3·0	—
Anastigm 1-18 (Short foci) ...	−0·9	−1·4	−1·9	−2·2	−2·2	−1·4	+0·4
Aplanat 1-7 ...	−0·2	−0·6	−0·9	−0·8	+0·2	+3·0	—

TABLE II.

Astigmatic Differences for Objectives at 100 mm. Focus.

Objectives.	Deviations for Inclinations of a Principal Ray of—						
	10°.	15°.	20°.	25°.	30°.	35°.	40°.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Anastigm 1-18 ...	−0·1	−0·1	−0·2	+0·1	+ 0·6	+ 1·0	+8·0
Anastigm 1-9 ...	0·	+0·05	+0·5	+0·3	+ 0·6	− 0·5	−4·0
Anastigm 1-12·5..	+0·1	+0·2	+0·4	+1·3	+ 2·2	+ 3·0	—
Anastigm 1-6·3 ...	+0·1	+0·4	+1·2	+2·2	+ 3·6	+ 4·2	—
Anastigm 1-4·5 ...	+0·2	+0·6	+1·5	+3·0	+ 5·3	+ 9·0	—
Anastigm 1-7·2 ...	+0·2	+0·5	+1·4	+2·8	+ 5·5	+11·0	—
Aplanat 1-7 ...	+0·8	+2·0	+4·0	+7·0	+12·2	+19·4	—

Table I. shows the deviations of the mean curvature of the various anastigmats for every interval of 5 deg. The table gives also the corresponding value for an aplanat of relative aperture 1-7, as it may be interesting to directly compare the correction of this hitherto best type of lenses with the Zeiss anastigmats.

Table II. gives the astigmatic deviations. The figures are reduced to a focus of 100 mm.

These two tables suffice to give an adequate idea of the correction of the anastigmats. Studying them more closely, we find that the long-focus lenses at the series 1-18, the typical copying lenses, are at the head of the table. In computing these lenses, the greatest possible pains were taken to render anastigmatic flatness as perfectly as possible without in the least neglecting accurate spherical correction.

* By "aplanat" we understand the well-known type of symmetrical doubtlets of four lenses introduced by Steinheil. Previous to the invention of the anastigmate, it was the best type, and appeared in the markst under many names, such as aplanat, euryscope, rectilinear, symmetrical, lynksioscops, paraplanat, etc.

To sum up, it would seem that so far as present experimental evidence goes, the photographer cannot by modifications in development alter the ratios of the densities of the silver deposit at different points; these are determined by the amount of light action. He can, however, and does, alter the ratios of the opacities, or, in other words, the printing qualities, (1) by stopping development at a particular stage, (2) by making such modifications in the mode of development as tend either to reduce the general fog and thus increase the contrasts, or to increase the amount of fog and thus lessen the contrasts. The two kinds of modifications are designed respectively to meet over-exposure and under-exposure.

The Elements of Photo-micrography.

By "MIKRON."

(*Continued from page* 8.)

PURSUING the consideration of the qualities of sensitive plates, it may be noted that the best for this class of work are those which contain a good supply of silver salts. But it will, no doubt, frequently be found that ordinary bromide plates, though capable of giving good results when used for ordinary photographic purposes, will fail to give satisfactory reproductions of microscopic objects. As a rule, the fault will lie in the nature of the preparation, its colour or opacity rendering it unfit for photography. Experience alone can teach what specimens are likely to give good pictures. Speaking generally, and with regard to ordinary bromide plates, blue and violet, on account of their transparency to the actinic rays, do not give satisfactory negatives, whereas yellow and red colours, if neither too transparent nor too dense, usually give good results.

It not infrequently happens that the operator cannot select his colours or stains with special regard to their photographic suitability; it being essential that many preparations, particularly bacteriological and pathogenic specimens, should be treated in such a manner as to give a decided contrast between the spores of the bacilli and spirillæ and the organisms themselves, or between the organisms and the lymph, sputum or tissue in which they are embedded.

In such cases it is usually necessary to employ a monochromatic light of such a colour as will neutralise the effect of the more actinic colours used.

The difficulty may be overcome in two ways, in each of which the end in view is the reduction of the sensitiveness of the plate to the blue or violet rays by increasing its sensitiveness to the yellow.

By interposing a colour screen tinted yellow or yellowish orange, the more actinic rays are absorbed, and, as a result of such absorption, more time is given for the less powerful rays to act on the plate.

The colour and thickness of the screen naturally have an influence upon the photograph. And here again experience is the best guide. If the screen be too thick or too dense, the exposure will be inconveniently prolonged—in any case, however, the screen will increase the exposure required—whilst if it be too thin the more actinic rays will not be sufficiently cut off, and the photograph, consequently, will lose in definition.

Fortunately, suitable glass screens may readily be procured for this purpose. And it is a good plan to have a small selection of several different shades, so as to be able to alter the light to suit various objects. Very often the want of a suitable light-filter is the cause of failure; consequently, some microscopists prefer to use a fluid filter contained in a thin bath. The chromo-copper solution is in great favour for this purpose.

Prof. E. Zettnow, when using sunlight, keeps a somewhat concentrated solution for stock purposes, and dilutes it as required. It is composed of:—

Nitrate of copper	160 parts.
Chromic acid	14 ,,
Water	250 ,,

But for general purposes the following, in a layer 1—2 cm. thick, is more convenient:—

Sulphate of copper	175 parts.
Potassium bichromate	17 ,,
Water	1,000 ,,

This filter has the advantage of allowing only a small part of the spectrum to pass through; if very strong only yellow and green rays appear.

As a rule, a somewhat broader range of the spectrum is required in order to obtain the structural detail of the object. For bacteriological purposes it is often useful to get good marginal definition without evidence of internal structure, and, in such cases, a somewhat orange-coloured screen is desirable—although from an educational point of view photographs of this kind certainly lose in value the nearer they approach to being mere silhouettes.

The very best plates, however, for photo-micrography are the iso., or, more correctly speaking, the ortho chromatic plates. These plates, as all readers of these columns will know, are rendered less sensitive than the ordinary plates to the blue end of the spectrum and more so to the yellow and red rays. Since their introduction the microscopist has had a new power at his service, and his photographic art has made truly wonderful progress. In fact, their qualities are so valuable that, in most cases, it is a question whether ordinary plates are worth using.

By no means the least important characteristic of these plates is that by their use ordinary lenses of cheap construction and not even corrected for photography may be employed without the necessity of making a correction for the difference between their visual and chemical foci, and, frequently, without the use of a screen or light filter. T. F. Smith, F.R.M.S., found that whilst he got blurred images on an ordinary plate when using a cheap uncorrected objective, the image on an orthochromatic plate, exposed under identical conditions, was perfectly sharp, both with and without the use of a screen. From which it will be seen that the screen does not serve the purpose of altering the focus of the objective, but is merely of use to increase the sensitiveness of the plate to the particular colour of the object.

The best indication of the necessary intensity of the colour screen is given by the appearance of the object on the focussing glass. When it loses its characteristic colour and becomes black it may safely be concluded that the filter is satisfactory.

With regard to the exposure nothing definite can be said, inasmuch as each change in the amount or quality of the light, the nature of the object, or the combination of lenses employed will alter the exposure required. Many standards have been given from time to time to indicate the exposure required under various conditions, but they have very little practical value. Experience is by far the best teacher, for it is only by careful practice and close observation that the difficulty may be overcome.

The beginner, however, cannot adopt a better method of obtaining a standard than that recommended by Andrew Pringle, which, briefly stated, is to find the exposure required to give full density to the bright part of the plate when each objective is used with a fixed quality of light and different extensions of the camera. If this value be duly recorded it will serve as a starting-point from which the operator may judge the exposure required in any particular case.

Although under-exposed plates tend to give an absence of structural detail, they are preferable to over-exposed negatives, as with the latter it is difficult to get good contrasts in the picture, whereas the former may be intensified in the usual manner.

As one of the most valuable features of photo-micrographs is that they give an accurate reproduction of the microscopic preparation, it will be seen that negative retouching is not permissible on account of the possibility of destroying its scientific value. But the reduction or intensification of its density may safely be practised when necessary.

Let us suppose that the whole of the apparatus has been arranged in a perfectly rigid manner, and it is desired to photograph a prepared object. The first thing to be done is to see that the lamp-glass, condenser, and lenses are perfectly clean and free from dust. Then the apparatus is examined to make sure that the light and the centre of the focussing glass are in the optic axis of the microscope. The microscope is then disconnected and the prepared slide placed on the stage. The particular field desired must be selected and brought into focus, when the microscope is again connected to the camera, and the object focussed, if possible, on the ground glass and finished by exchanging this screen for one of plain glass—the light-filter, if required, should also be selected and adjusted at this stage. After the object has been correctly focussed it is advisable to wait about ten minutes and then examine the screen again. When first commencing operations it will, no doubt, be found that the focus has altered, owing to the expansion of the brasswork of the microscope on being warmed by the heat from the lamp or other source of light. If this has occurred the focus must be readjusted. The glass must now be removed, the camera shutter closed, and the plate slide very gently placed in position and its shutter withdrawn. A few moments must again be allowed for the apparatus to become perfectly steady. All is now ready for the exposure, which, in every case, should be timed by a watch to eliminate the element of chance. The camera shutter is then raised, and the necessary exposure given.

The operator should develop all his own negatives, as well as make his own lantern-slides and prints. For the latter a fine-surfaced paper should be chosen, otherwise the detail will be lost; bromide paper is particularly good for such purposes.

A record should always be kept of the common and scientific

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names of the object, its colour or the colour of the stain, its magnification, the exposure given, as well as the class of plate and the developer used.

With regard to the developer but little need be said; there are so many excellent preparations in the market, and their qualities are so well known, that this matter may safely be left to the operator's choice. It may, however, be remarked that it is essential that the developer used should have considerable latitude and power.

It has been said that the magnification of the enlarged image should always be stated. This is, indeed, a very important point in connection with microscopical work of any description. The statements regarding the magnification obtained by the use of certain combinations of lenses, as given in opticians' catalogues, should never be taken as strictly correct. For high-class work, or for any work which is intended to be of scientific value, it is absolutely imperative that an accurate measurement should be made of the amplification given by the particular objective employed.

The best plan is to proceed in the following manner:—Carefully mark the baseboard of the camera into feet, which may conveniently be sub-divided into inches. Then reduce the camera extension to the smallest it is intended to use, and clamp it firmly to prevent accidental movement. Place a stage micrometer on the microscope and focus the projected image on the screen. The space between the lines is then carefully measured by means of an accurate rule, and, if the measurement of the magnified image be divided by that of the object, the exact size of which is, of course, already known, the magnification obtained by the use of that particular lens, or combination of lenses, will be given. Now, if the camera extension be increased by, say, six inches or a foot, and the measurement again taken, a second standard will be obtained. This process must be repeated with each objective at regular intervals along the baseboard, until the full extension is reached. In this way a table of amplifications may easily be prepared, and, although it may be a somewhat uninteresting and troublesome process, when once estimated it will save an immense amount of time in later operations.

The amplification required will, of course, vary with the nature of the object. For instance, many entomological and botanical specimens will not need very high magnification, whereas pathological and bacteriological specimens may demand the highest powers obtainable. As far as possible it is a good plan to adopt a standard magnification for each class of work, as the resulting pictures will then be directly comparable, and, consequently, of much more value than a series of photographs taken under widely different amplifications.

(*To be continued.*)

Les Petits Metiers and Photography.*

By P. C. Duchochois.

There is in the French capital a class of artisans inventing, making and decorating at home various objects, many of them showing real artistic taste; all great ingenuity. They are *les ouvriers en chambre*.† Their shop is their parlour, and sometimes also the kitchen and the dining-room. From their hands come those *articles de Paris*, those charming little *riens* which we admire when, in our hours of leisure, we slowly walk in the streets of New York, observing the passers-by, stopping here and there, looking at every show-window, making our profit from everything we see. Nothing so useful, so instructive, as to do nothing intelligently. A paradox? Not at all. There are people who do nothing, do not see, do not think; but there are others who do nothing, see and do think—and so much the better. We love to loiter in the rich, in the poor, and in the bad wards of this immense city, inhabited by people of all nations, and, verily, dear reader, if you do not, we pity you. There are many amusing and philosophical observations to make on our singular human nature; many beautiful things to see in the fashionable business streets which cultivate or develop one's artistic taste, and this is not to be disdained even by a photographer. Besides, seeing suggests new ideas which never come when confined in our business-place or at home. If it happens that you are in a working mood, take your Climax detective with you, but by all means do not forget your note-book. Ideas are sometimes so fugitive that they must be caught on the fly, or they disappear, never to come again.

Well! the Parisian artisan often loiters in daytime or at night in search of new ideas. In the afternoon he will go in the Louvre to see, among others, the peerless Sauvageot's collection of objects of vertu from the antique, the Renaissance, the time of Louis XIV, of Louis XV., etc.; then he will stop at the Hotel Cluny, where all the marvels of the Middle Ages are accumulated, and in the Museum of the Decorative Arts at the Carnavalet Hotel he also will find much to learn. And when the evening comes —Paris is in full blaze, then —he will stop at the shop windows of the Rue de la Paix, the Avenue de l'Opéra, the Boulevards, the Palais Royal. He wants to know what is done by others, for it is a *sine qua non* in his trade to devise new, original models, and the means to make them at little cost as rapidly as possible, to avoid imitation and competition, for the profits are already small. It is a struggle for a living, but he is satisfied with his lot, takes life for what it is worth, and sings in working.

Of course, our artist-workman was not long to see what help photography could be to his industry, and he became a photographer. Indeed, reader, if we could bring you into his workroom, you would be astonished at the various ingenious applications he has made of our art. We know many of them; not all. We do not know everything, and besides, some are trade secrets, and rightly, for they could not be patented; moreover, often it would be useless. Some articles are good for a season or two and then go out of fashion. We will describe everything which came to our knowledge; or, at least, everything we are at liberty to divulge. Some of these applications have been published, but, perhaps, in photo-journals you do not read, or in photo-books you do not buy, if you ever buy any.

Of course, the first process, applied in *les petits metiers*, was the ordinary printing-out process for the decoration of boxes, small objects with coloured pictures. An albumen print, toned, fixed and dried, is placed against the glass of a window, face downwards; the image is thus seen as a transparency. Then, with a lead-pencil, a rough, light sketch of the outlines of the image is traced, to mark the places where the colours should be applied. This done, the proof is laid face downwards on blotting-paper and coloured from the bath with water or oil colours in flat tints, without taking notice of the half-tones; for when the paper is rendered transparent by being imbued with castor oil and wax, dissolved in turpentine, the colours thus applied on the back are softened by the thickness of the paper and the photo-image, which, together, do not permit one to see the strokes of the brush or the imperfections of the colouring. It now remains to paste the picture on the material selected—wood, boxes, etc.—by means of glue, with which is mixed white lead or white zinc, to which is sometimes added a coloured substance, to form a white or tinted ground, and, finally, to varnish it with copal varnish.

This and similar processes were soon discarded, the pictures turning yellow, partly from the drying of the oil, partly and principally from the fading of the photographs; and, also, because, though the pictures were more artistic, the effect was not so pleasing as that of the common chromo-lithographs, employed for the same purpose in decalcomanie.

The carbon process, which yields unalterable images, was next employed, and its applications are indeed quite numerous.

A carbon print, on its removal from the sensitising bichromate solution, is spread on a sheet of transparent celluloid, then squeegeed into contact and allowed to dry. It is then exposed through the celluloid film, and developed in the usual manner, alumed and set aside to dry spontaneously. The *modus operandi* is so well known that we need not describe it.

The carbon image is coloured with oil or water colour, the latter preferably. Those which resist the action of light with certainty are, according to Rood, a great authority in these matters, cobalt, French blue, smalt, new blue, cadmium yellow, yellow ochre, Roman ochre, terre verte, Mars yellow, light red, Indian red, raw umber and burnt sienna. These colours, as well as every other employed for the purpose in question, should be ground with the following albumen mixture:

Clear albumen	100 grams
Sal ammoniac	5 „
Glycerine	5 „
Ammonia	4 drops.
Water	25 c.c.

Sometimes the image is ornamented by a border *à la grecque*, foliages, Arabic ornaments, etc., which are coloured as above and in places gilt with a pigment made in the same manner with silver foil.

The object of preparing the colours with albumen is to prevent them from being dissolved and running off when an alcoholic varnish is applied, the alcohol coagulating the albumen, which entangles and retains the colouring matters.

As to the backing, white or slightly coloured, it is applied on the object upon which the picture is to be pasted. If it is desirable that the ground be in gold, a sizing is applied all over the picture and upon it German gold in fine powder is dusted. We have seen pictures in the Byzantine style made in that way, which, indeed were very fine.

* The small trades and photography.

† Working men working in their room, at home.

Pseudo-stained glasses are made in the same manner; the carbon print is developed as in the ordinary well-known process on a glass plate, finely ground by hydrofluoric acid and then colored with transparent colours. These colours are all the aniline colours prepared with albumen, or, in lieu, such vegetable colours as madder, alizarine, cochineal, ammoniacal carmine, indigo, indigotine, pastel quercitron, fustic, sumac, etc.

Pseudo-ceramic pictures are made by developing, or usually transferring, a carbon print on faïence or porcelain (cups or dishes), colouring the images, then varnishing by two or three coatings of copal varnish, which is dried in an oven heated to a temperature of about 58 degrees C.

These images are coloured by girls, and sometimes by the wives of the working-men, all working at home. They colour every kind of prints, lithographs or photographs. The latter are also pasted on panels, gelatinized, the edges rubbed clear to the wood with sand paper for a space of about one-quarter of an inch, then coloured, partly with water colours, partly with oil colours, and when finished varnished as oil paintings. You have seen many of these pictures in the show windows of Broadway and other streets. They are sometimes sold as original oil paintings by unscrupulous persons. The colourists earn from 5 to 6 francs per day: sometimes more, according to their ability and their taste in harmonizing the colours. This they learn by an apprenticeship. All the working men in France likewise learn their trade by an apprenticeship, for which their parents pay from a few hundred francs to as much as three hundred dollars, besides giving their time for two to three years; but after the first year they commence to earn something, and their wages increase gradually as they become more useful.

It is that system of paying apprentices which makes the French working man so often superior to others in the making of objects requiring taste, and an artistic education which Paris offers to every one by its numerous evening schools and the collections accumulated in its museums, open on Sundays as well as on every weekday, of a variety of objects, jewellery, cameos, mosaics, ceramics, cabinets, all the master-pieces of decoration, from the Greeks, the Romans, the Arabs, the artisans of the Middle Ages, of the Renaissance and of modern times.

The applications of the carbon process above described are not the only ones. There are many others, among which the following are quite ingenious.

The objects to be decorated are painted with patches of blue, red, yellow, green, etc., and the selected colours are blended by lightly passing over the whole with a camel's-hair brush; or the objects are coated with a little litho varnish or gilder's sizing, then dusted in places with different metallic powders, silver and German gold, and bronzes of various colours. Upon the surface of each object thus prepared is applied a carbon print, not too intense, from an appropriate design, such as marble, tortoise-shell, etc.

For this kind of decoration one also employs an impression from watered silk, made in the following manner: A zinc plate is inked; then, having placed upon it a piece of moiré with proper care, the whole is subjected to a heavy pressure under the typographic press (a letter press will do). The zinc plate, being thus covered with an exact image of the moiré, is etched with nitric acid, to obtain a relief sufficient for printing, and the print pulled off, giving a negative. Laces, etc., can be reproduced in the same manner.

Designs, strange, fantastical, inimitable, called marbrotypes, or selenotypes, are much employed for this kind of ornamentation. These are obtained by various processes. The most simple consists in rolling upon a zinc plate, previously inked, a coarse, stiff sponge, one having holes more or less numerous and big; or, better, a similiar sponge may be impregnated with printing ink, and, by lightly rubbing and dabbing, similar designs, never the same, are produced. A proof of these designs can be immediately pulled off or, if it is desirable to preserve it, the plate is etched as usual by nitric acid, and from it proofs are pulled off for many purposes.

All the processes above described serve for the decoration of buttons for sleeves, ladies' dresses and of other articles.

Here is a process by which ornaments are obtained in a mechanical manner, without the aid of photography. Masks, made on thin paper, representing any design of the same size as the object to be decorated, let us say a white or lightly coloured button; designs cut off from perforated stamped papers, such as those placed in boxes of candies; embroideries, tulle, cheap laces, anything from which can be cut a design, is applied to the button by wetting it slightly; then, holding the button from the back by means of a thin piece of wood passed through one of the holes, it is held over an oil lamp or a candle to blacken it on the parts not protected by the mask. This done, the latter is removed and the button just dipped in a copal or shellac varnish, then at once dried over an alcohol lamp. The whole operation is very rapidly made indeed. We have seen it done in Paris by *un ouvrier en chambre* who, although only a few cents were paid per dozen, managed to make a good day's work. Instead of using masks, he and his daughter simply blackened the whole surface of the object, and with a sharp pointed stick of hard wood, which from time to time they slightly wetted, they drew arabesques upon the lampblack.

The following is a photo process of great simplicity employed for the decoration of window glasses or of transparencies, usually used to make ornamented coloured borders appropriate to the image which forms the principal subject. Dissolve 5 grams of gum arabic (best quality) in 100 parts of distilled or rain water, then add 30 c.c. of clear albumen, free from fibrine, which is eliminated by beating the white of eggs to a very thick froth and decanting the clear liquid after ten or twelve hours. To this is added a solution consisting of 4 grams of ammonia bichromate, 1 (one) c. c. of aqueous ammonia, and 150 c.c. of distilled water. This compound keeps well for three or four days. It should be filtered before use.

The glass plate, cleaned by immersion in a lye of carbonate of potash, then rinsed under the tap, is coated when well drained but still damp, and, this done, the dessication should be hastened by gently and uniformly heating the plate and fanning, care being taken not to heat the plate above 60 deg. C., for at 65 deg. the albumen commences to coagulate and becomes opalescent.

The plate should be exposed in the shade, not to the sun. The time of exposure in clear weather is about five minutes, but no certain rules can be given. When the image is visible, which is ascertained by opening one of the sides of the lid of the printing frame, the exposure time is very likely correct.

On its removal from the printing frame the plate is immersed in a tray containing filtered water, which dissolves the albumen compound not acted on by light, leaving the image fixed on the plate. Generally from three to four minutes of immersion suffice for the entire development. It may, however, be ascertained by viewing the plate, while it is immersed in water, at a certain angle, when the whole image will be seen on the surface of the plate.

After developing, and while the plate is still wet, but drained for a few seconds, the image may be coloured. All the colours soluble in alcohol can be employed: aniline, blue, red, yellow, black, etc. The transparent vegetable colours, quercitron, indigo, sumac, carmine, cochineal, etc.,* can also be used.

The object of using strong alcohol as a solvent is to increase the insolubility of the albumen, which then retains the colouring matters in its pores without the possibility of its being removed by subsequent washings with water. Necessarily the colours are retained in proportion to the various thicknesses of the insoluble albumen forming the image; hence the process.

To colour the whole image, the plate is flowed with a concentrated alcoholic solution of the colouring matter, and when the alcohol is evaporated and the colour dry, the plate is washed under the tap until the colour not fixed by the albumen is dissolved, and the image stands out clear. It remains now to let the plate dry spontaneously, and to varnish it, not with an alcoholic varnish, which would dissolve the colour, but with a copal varnish thinned with turpentine.

By colouring the image in the way above described a monochrome is obtained, but it is obviously possible to apply different colours by juxtaposition. For example: the red is first applied on a certain part of the design to be coloured with that tint; then, after the alcohol is evaporated and the aniline dry, the plate is washed and the yellow colour and afterwards another colour are applied in the same manner on the other parts; the yellow will not take on the red, nor another colour on the yellow and red, for the albumen coagulated by alcohol will prevent it; moreover, colours dissolved in water will not take on any part of the design.

Two causes of failure may occur in this process, viz., under and and over exposure. In the first case, there is no remedy; the half-tints will be washed off during the development; in the second, a veil is formed, which very often can be removed by passing a soft brush on the plate under a jet of water.

In our report of the apparatus, etc., at the Convention, we omitted to mention a very good enlargement from a quarter-plate negative of a cat taken by Mr. Le Blanc, and developed with Rodinal, which speaks well for its powers. Messrs. Schwarz and Co. also showed some good specimens of work done with their developers, which we ascribed to another firm.

Mr. T. E. Freshwater's Bee-culture Slides.—We are pleased to note that Messrs. Newton and Co, of Fleet Street, have been awarded a silver medal for the above well-known slides which were shown at Pall Mall last year. The medal was awarded for the most interesting and instructive exhibit of any kind connected with bee-culture at the Royal Show at Chester.

* The vegetable colours are faster than most of the aniline colours, but not s brilliant.

Photography and Art.

Mr. Shapur N. Bhedwar recently delivered a lecture on the above subject before a large and crowded audience at Bombay, among whom was a goodly gathering of Parsee ladies. It was the sixth public lecture of the season in connection with the "Dnyan Prasarak Mandali," and was one of the most successful lectures delivered under its auspices. Mr. K. R. Kama, the President of the Society, occupied the chair. The lecturer handled his subject in a manner at once interesting and instructive. Mr. Bhedwar began by adverting to the laws which govern pictorial effect in photography. Just as a true poet, said he, is supposed to be well acquainted with the laws of syntax and prosody and to possess an accurate knowledge of the language in which he pours out his effusions, so is an artist supposed to be well versed in the laws which govern his art. An artist might be doing his picture by means of the brush, the pencil, or the camera, but in every case it becomes incumbent upon him, however gifted by nature he might be with inborn taste and genius, to study well and be thoroughly grounded in the laws which go to make the composition of a picture perfect. Mr. Bhedwar then gave an apt illustration of two photographs, one done by a photographer who had well studied his art and the laws that govern it, and the other by one who had not studied such laws. In the work of the former, said he, all delicate and artistic beauties were self-evident. The picture of the latter, however, looked flat, insipid, and tottering, and why? It was because the worker was more or less ignorant of the laws of perspective, light and shade, values of colour, balance, and composition. After pointing out the analogy of art in nature with the art in pictorial composition, Mr. Bhedwar adverted to the important part that selection and arrangement play in the pictorial effect of a photographic picture. Artists, like true poets, observed the lecturer, are born and not made, but nevertheless artistic faculty requires to be properly cultivated by study and application. To make a picture satisfactory, artistic, and perfect, the following three principal factors or elements of composition are necessary according to the lecturer, namely:—(1) The story should be told in such a manner that the meaning and intention of the artist should at once be evident; (2) the arrangement of the whole composition should be in good general form; and (3) the picture should admit of a pleasing effect being produced on the mind by the harmonious interplay of light and shade. By the help of good composition, arrangement, and selection an artist is enabled to lay before others his meaning, his whole heart, his feelings, and in fact the inmost workings of his mind all at once. By a careful selection he avoids what is base and ugly, and embodies in his picture all that is lovely, charming, beautiful, and noble in nature. The highest aim of art which the artist keeps in view is, according to the lecturer, to render nature with the greatest truth, but in its most pleasing aspect. Adverting to forms in composition he said that they were pyramidal, circular, semi-circular, elliptical, and diamond-shaped, and that nature designed mostly her noble works in some one or other of these forms. Square and angular forms were inadmissible in picturesque representation. He then explained what part the different kinds of lines play in the composition of a good picture. Horizontal lines, said he, give an idea of calmness and weakness; vertical lines indicate strength, vigour, pride, and power; curved lines are typical of delicacy, meekness, and humility; lines running indiscriminately into lines are indicative of confusion, bustle, excitement, and anger. Explaining by means of diagrams how lines tend either to direct the attention to one point and concentrate it there, or to let the eye loose on the wide and broad expanse, the lecturer proceeded to illustrate continual motion by giving the very familiar and appropriate instances of the waves of the sea, the flowing of the river, the meandering course of a rivulet, the motion of a person skating on ice, and the serpentine motion of the snake. Referring to light and shade, or what is technically called "Chiaroscuro" in Art, Mr. Bhedwar remarked that it was the harmonious blending of light and shade that gave a sort of solidity to the figures and other objects introdnced into a picture. The mere arrangement of lines was not enough to make a picture perfect. A picture without light and shade could well be compared to a human body without flesh. Without a well-balanced arrangement of light and shade pictures lose their breadth, roundness, expression, and sentiment. Coming to the uses to which light and shade could be put to, Mr. Bhedwar pointed out that the object of chiaro-scuro was to so divide the space into masses of light and shade as to give breadth and solidity to the whole, that the arrangement and lighting of the chief point of attraction in a picture should be such as to give it superiority over all others in such a manner that the eye, after seeing it first, is gradually and insensibly led over the whole, and then made to settle again on the principal object, and that the subordinate parts of the picture, when kept subdued according to their respective value and importance, save the eye from running in all directions in confusion, and rescue it from unrest and perplexity. After explaining the various combinations of light and shade and the wider effects of chiaro-scuro such as relief, contrast and interchange, harmony and breadth, the lecturer stated that variety, repetition, and echoes, principality and subordination, contrast and unity played no less important parts in the composition of a picture. In nature, said he, variety is evident in almost every phase of it. The flat, unvaried surface of the sea is disturbed and diversified by the rising waves in thousand continuous forms and shapes; and likewise without variety a picture can never be perfect in composition. The law of principality, with its corresponding idea of subordination of parts, applies to all works of art in which order and design play any part. In a picture it is generally the case that one part plays an useful and important *role* and the other parts become subordinate to it, otherwise it would be a case where all command and none obey. Hence the meaning of a picture is centralised in one point about which and independence to which the others are arranged. In this connection he remarked that just as there could not be on one throne two kings ruling over a country, just as there could not be two mistresses to govern a household, just as there could not be two heroes represented in a drama, just as two swords could not be held in one scabbard, so likewise there could never be such two points in a picture as possessed equal significance. Defining unity to be the keystone of nature that expresses the harmony of the Divine mind as rendered in creation, the lecturer said that unity was nothing less than the due relation of the whole to its parts, which alone could give to objects their time and touching character. The greatest pleasure and gratification of the beholder arises from the unity of the whole arrangement, for on unity depends the intention meant to be expressed in a picture.

Messrs. Adams and Co.'s factories and retail establishments were closed on Saturday for the outing of the staff, which number forty-eight, many of whom have been working late and early to cope with the pressure of work.

With reference to Mr. Middleton's camera party to Belgium, a misprint occurred in our issue. "The fare from London or Manchester, £7 17s. 6d.," should have read, "From London or March." Full particulars will be found on page v. of last week's issue.

Mr. F. Rossiter, late Hempsted and Co., has moved into more commodious premises at 9, Grand Parade, St. Leonards-on Sea, where he has fitted up a dark-room, which is free for changing plates, and 6d. or 1s. for developing. Ilford, Marion, Barnet, and other plates are kept in stock.

Yevers' Featherweight Dark-Slides.—In our notice of this we stated that the shutters were made of Willesden paper, but this is not so, the material employed is a special composition much more flexible and durable and more suitable for the purpose. The slides may also be obtained fitted with black celluloid at a slightly increased price.

The party of English photographers who are attending the Convention of the Photographers' Association of America sailed by the s.s. *Arizona*. The party has dwindled, owing to the fact that some of the members have gone earlier, and some been obliged to postpone or relinquish their visit, until only six remain. Others, who have gone before, will join them at the Convention. The *Arizona* sailed by the morning tide, and had a fine quiet trip as far as Queenstown, with a sunset that brought many cameras into play.

The Northern Photographic and Scientific Association.—On 1st inst., through the kindness of Mr. Geo. Murray, F.R.S.E., F.L.S., a visit was paid to the Natural History Museum at South Kensington, and a most enjoyable afternoon was spent. It has been arranged to have an excursion every Saturday afternoon during the summer. Next Saturday, July 8th, a visit will be paid to White Webbs Park and Enfield. Train leave Broad Street, 2.55 p.m.; Finsbury Park, 3.12 p.m.; Harringay, 3.15 p.m.; Hornsey, 3.17 p.m.; Wood Green, 3.20 p.m.; and Bowes Park, 3.22 p.m. On Thursday, July 20th, at 8 p.m., at the Public Hall, Canning Crescent, High Street, Wood Green, Mr. Chas. Coulter will deliver a lecture on "The Chemistry of the Dry Plate."

South London.—Ordinary meeting, the 3rd inst., the President, F. W. Edwards, in the chair. At the conclusion of the formal business, and the announcement of additions to the library, Mr. J. W. Bolton gave a demonstration of the manipulation of the Paget print-out lantern plates and opals. He explained the various stages in a very lucid and able manner. For printing the opals in ordinary printing frames he showed a simple cardboard mask and frame which the Paget Company were placing in the market for sale for a few pence. He also showed a frame specially constructed for printing the opals, and gave the formulæ of the toning and fixing bath (both combined and separate) which he used. At the conclusion of the demonstration the results were passed round, and the lantern slides shown in the society's lantern.

Holiday Resorts and Photographic Haunts.

THE NORTH YORKSHIRE DALES.

By GEO. LAMLEY.

ALTHOUGH possessing within itself but few objects of interest, Barnard Castle is nevertheless equalled by few towns as a centre for photographers, standing as it does in immediate proximity to some of the finest and most varied river scenery in England.

It has the further advantage, of no mean importance when a stay of some days is contemplated, of possessing an hotel (the "King's Arms") which deservedly enjoys the reputation of being one of the best and most comfortable in the north of England.

The castle, which is entered through the stable-yard of the hotel, is now a mere shell, only a round tower and some fragments of the walls remaining, but if we descend to the river, a little above the town, the ruins form a striking picture, especially in the evening. The river makes a bend round a precipitous wooded hill crowned by the tower and the ruined angle of the wall.

Above the river the Tees can be followed for some distance, and there are numerous paths winding up the steep wooded banks.

A few yards to the right, as we leave the hotel, stands the small octagonal market house, and behind it a passage leading through the churchyard past the old Norman door, and emerging on the open hillside below the town. Numerous tracks lead down to the edge of the Tees, along which a path can be followed to the Abbey Bridge, some two miles below. By taking advantage of the nature of the river bed, which is formed by layers of limestone rock, inclined at a very slight angle and descending like a gigantic flight of steps towards the centre of it, one may go for a considerable distance clear of the trees which overhang the banks, and obtain many views of the most varied character which are invisible from the path. This is more especially the case as we approach the bridge, when the bed narrows and gigantic blocks of rock are scattered in all directions. Of course, when the river is in flood it fills the whole bed, but at other times there is no difficulty in getting along.

Crossing the bridge, a few minutes' walk to the right brings us to Egglestone Abbey, an interesting ruin strikingly situated; then retracing our steps to the bridge we continue past it down the stream, obtaining views of varied character, sometimes the river foams through huge boulders under steep and rocky banks, and then in the next few yards will open out in a broad reach, where hardly a ripple breaks its placid surface, only to be again hemmed in by rocks.

Four miles below Barnard Castle we come to the junction with the Greta, and a few yards up the latter stream cross the picturesque Dairy Bridge, and following the track up the hill on the other side, in a few minutes reach Northam Tower, an interesting building, of which the central portion is an old tower of the fourteenth century, round which cluster buildings of various dates.

Down the hill beyond the tower we reach the Greta again, at Greta Bridge, and two miles up it on the further side come to Brignall banks, which skirt the stream for about three miles, and a road across the moor brings us after a pleasant breezy walk of about five miles back to Barnard Castle, in time to enjoy the striking view which the town presents in the late afternoon under the mellow light of the sinking sun. As we descend the hill, the whole of the old town is seen clustered between the river and the protecting castle on the hill above. Down in the bed of the stream a good general view is obtained.

There are several tributary streams on the Yorkshire side which flow through pleasant wooded glens, prominent amongst which is the Deepdale Beck, which flows into the Tees a few yards above the town. At the point where the stream leaves the open moorland to enter the glen, there is a small fall.

Taking a train for ten miles up the stream to Middleton, we are only five miles from High Force, the largest fall in the country, and just above the fall the river is very fine. No longer shut in by rocky banks, as it has been for some miles below, it spreads out in a broad stream, and comes rushing in thousands of cascades over the huge boulders that form its bed. By clambering over the rocks above the fall, we reach a point in the centre of the stream from which the distance is filled up by the huge bulk of Mickle Fell, thirty miles away.

The river should be ascended to Cauldron Snout, a striking fall some six miles away, the wild beauty of the scenery compensating for the extreme roughness of the walking.

A short run by rail takes us to Durham, too well known to need description, and remarkable for the freedom given to photographers in the cathedral, of which we availed ourselves.

Near Cotherstone, half-way between Barnard Castle and Middleton, there is an old mill on the bank of the Tees.

Limit of space prevents any description of our further route over the Moors to Kirkby Stephen and Brough with its ruined castle, Mallerstang to Hell Gill, past the ruins of Pendragon Castle (great in Arthusian legend), over the hill to the head of Swale Dale, and down it to Muker in pouring rain, up the hills again into the streaming clouds, and down to Askrigg, then for several stormy days to the swollen streams and falls around, prominent amongst which are Hardraw Foss and Mill Gill Foss, the former the highest, and the latter one of the loveliest in England.

Then through Aysgarth and Leyburn, we came by Middleham Castle, Jervaulx Abbey, and Hack Fall to Ripon and Fountains Knaresboro and York.

A MONTH IN SWITZERLAND.

By CHARLES J. LEGGE.

ON the 2nd of August our party of three, a lady and two photographers, one clerical, one lay, set out for a month's holiday in Switzerland. The change from the dull, cold weather of England to the brilliant sunshine which, with the exception of three or four days, it was our happy lot to meet with all the time as were away was alone worth going out of the country for.

Our desire being to waste as little time as possible on the road to our holiday ground, we journeyed straight through, after a few hours spent in Antwerp and Brussels, to Thun, from which place, after a very much needed night's rest, we took boat and train to Lauterbrunnen, and then climbed by the electric railway up the precipice to Munen.

At Munen we spent a week in the midst of the grandest scenery, almost surrounded by the giants of the Oberland. The weather on the whole was good, but we had most of our bad weather here. The cloudy days suited us best for photographic purposes; the bright ones, when every peak was as clear and sharp as if only a mile away, were, of course, best for sight seeing.

Our clerical member being due at Kandersteg, where he was August chaplain, he had to leave Munen, which he did in a thunderstorm. After spending a night at Spiez, on the lake of Thun, we drove up to Kandersteg, which is situated at the foot of the Gemini, and in the heart of some of the finest mountain scenery in the country.

At the hotel we found several other photographic enthusiasts, an English colonel and a Berne professor amongst others.

Although Kandersteg is somewhere about 5,000 ft. above the sea, the weather was so hot that it was absolutely necessary for us to break the back of our day's work as a rule in the early hours of the day before the sun was too powerful, and we were generally glad to charter a boy for a few francs to carry our impedimenta, more especially on our longer expeditions up the wild Gasteren Thal, over the Gemini, and to the Œschmen See, and other still remoter places. Our Sunday services were held in little Lutheran church, small, bare and barnlike, without any kind of musical instrument, even a tuning-fork. The chaplain was obliged to act as precentor and start the singing himself, taking the chance of starting on too low a key. The space under the pulpit, which was high and somewhat like a large wooden eggcup, was used for stacking the fuel supply for a large and ugly stove which was the most prominent object on what would be the chancel of an English church.

As our chaplain by good fortune managed to effect an exchange for his last Sunday with the chaplain at Rosenlaui, we departed at six o'clock on a very cold morning before the world was thoroughly astir, and drove down Spiez, whence by steamer and rail we got to Meiringen and then walked up to Rosenlaui in the cool evening of what had been a piping hot day. The next few days were spent more or less photographically out of doors.

Rosenlaui, given fine weather, is, to my mind, one of the most delightful of places for a good holiday. There is an exceedingly comfortable hotel, generally pleasant company, and the best of air and scenery. A few weeks spent here will give artist, climber, nature lover plenty to occupy him. One party had been five weeks there, and intended to stay as long as the hotel would keep them; and another family (numbering some photographers among its members) had been a little shorter, and were staying for some time after we left.

Our departure was made on a brilliant morning, which did not tend to lessen our regret. Homeward bound to encounter grim realities once more.

Our return was simply a reversal of our coming out. A night at Thun, and a long railway journey by night to Brussels, and then to Antwerp, and by steamer to Harwich, passing the doctor and customs, and then a tedious journey by rail, and so home to the dull grey days and work once more.

Catalogues.

TALBOT AND EAMER, Blackburn.

This firm send us a neat little price list of their manufactures, which include, besides the well-known Talmer hand-cameras, several novelties which deserve attention, notably the Economic hand-camera, which is designed for those who have lenses.

We have also received a pamphlet, descriptive of the Talmer hand-camera.

Societies' Notes.

ON the occasion of one of their summer outings the members of the Dorset Natural History and Antiquarian Field Club visited Shaftesbury last week, and among other papers one by the Rev. T. Perkins on "The Desirability of a Photographic Survey of the County," was very favourably received, and a sub-committee was at once appointed to report on the best way of carrying out the proposed seheme.

WE have received information that the Hamburg Government will offer gold, silver, and bronze medals for competition at the Hamburg exhibition.

THE Royal Cornwall Polytechnic Society will hold their sixty-first annual exhibition at Falmouth, on Tuesday, September 5th, 1893. Regulations: (1) All exhibits must be forwarded so as to reach the Polytechnic Hall, Falmouth, not later than Tuesday, August 29th, after which no article will be eligible for competition, and no space can be guaranteed. (2) All pictures and photographs must be framed; and if left at one of the following places of the society's authorised agents on or before Tuesday, August 22nd, will be conveyed from these depôts to and from the exhibition, free of charge, namely:—Messrs. Worth and Co., Cathedral Yard, Exeter; Messrs. Harris and Sons, 70, George Street, Plymouth; Messrs. J. Mitchell and Son, 15, Bedford Street, Plymouth; Mr. James Lanham, High Street, St. Ives, Cornwall. The above agents will not receive any article unless delivered to them free of conveyance and other charges. (3) The carriage of all other articles must be paid by the exhibitor. (4) All cases and packages sent to the exhibition must be addressed "The Royal Cornwall Polytechnic Society, Falmouth," and must bear the name and address of the owner; the covers to be fastened with screws. The exhibitor must write on the back of each picture his name and address, its title, whether it is an original or a copy, the name of the artist, and whether he is a professional or an amateur. The works of professional artists may be sold from the gallery, through Mr. E. Kitto, the secretary of the society, and a commission of 5 per cent. will be charged thereon. (5) Exhibitors must enter all articles intended for exhibition on forms provided for that purpose by the society, which may be obtained from the secretary, or any of the above-named authorised agents. (6) This entry form must in all cases be returned to the secretary on or before August 19th. (7) The society will not be answerable for loss of, or damage to, any article sent to the exhibition, but every care will be used to prevent injury while in the society's possession. (8) After admission no article may be removed until the close of the exhibition. (9) Discretionary power is vested in the officers of the society as to exhibiting any article sent.

THE Société des Amateurs Photographes have shifted their quarters to more commodious premises at 339, Rue St. Martin, Paris, where they have an excellent studio, dark-room, and library. Members are permitted to use there large cameras, burnishers, retouching desk, enlarging lantern, and can see all the French and foreign journals.

THE Hendon (Sutherland) Annual Parish Industrial and Art Exhibition, which includes photography, will be opened on 29th and 30th August.

THE Midland Camera Club will hold the first Annual Exhibition at the Botanical Gardens and College Gardens, Moseley, Birmingham, to open on Monday, October 2nd, and close on Saturday, October 14th. Every exhibitor must properly fill up, sign, and forward to the Hon. Sec., C. Jevons Fowler, 4, Woodstock-road, Moseley, Birmingham, an entrance form, not later than September 20th, 1893. Exhibits must be delivered at the Botanical Gardens, Moseley, Birmingham, not later than September 27th, 1893. Classes open to professionals: (12) Portraiture (direct); (13) enlargements. Classes open to all amateurs: (14) Hand-camera, six quarter-plates; (15) landscape; (16) figure studies; (17) lantern-slides, sets of six; (18) scientific, sets of six; (19) best picture taken in Moseley Botanical Gardens. Class open to manufacturers: (20) Greatest novelty in apparatus. Extra open classes (all pictures to be taken upon the "Sandell plate;" medals offered by Messrs. R. W. Thomas and Co.): (21) Six snap-shots (not smaller than quarter-plate); (22) landscape (not smaller than half-plate); (23) interiors (not smaller than half-plate). Silver medals, bronze medals, and certificates are offered in Classes 1 to 5, 7, and 11 to 17 (inclusive). Bronze medals and certificates are offered in Classes 6, 8, 9, 10, 18, and 19. Silver medals and certificates in Classes 21, 22, and 23.

THE Stockwell annual industrial and art exhibition will be held at the National Schools, Lingham Street, Stockwell, on August 7th and two following days. A special section is open to all photographers. Class 1, A set of three contact prints or enlargements; Class 2 to 4, Lantern transparencies. Mr. F. W. Spilling is the Hon. Sec., and will be pleased to forward entry forms. July 29th is the latest for receiving exhibits.

Societies' Meetings.

Ashton-under-Lyne.—On 15th inst. the ramble was to Chew Brook, near Greenfield, with Mr. C. E. Redfern, J.P., as leader. The party, consisting of twenty-five ladies and gentlemen, left the society's rooms, Henry-square, a little before two o'clock. The day was not very promising, but a good number of plates were exposed, and the party enjoyed the outing very much. They had tea at the "King William" Hotel, and arrived home in good time.

Brooklands.—Ordinary meeting 10th, the President, Rev. H. Bethell Jones, in the chair. Excursions to the following places were arranged:—Rostherne and Bollin Valley (Cheshire), Saturday, July 22nd, leader, Mr. E. G. Wrigley; Wythenshawe Hall (Cheshire), Monday, August 7th, leader, the President; Taxal (Derbyshire), Saturday, August 19th. The President then called upon Mr. G. G. Lynde to deliver a lecture on "Photographic Apparatus." Among other things, the lecturer paid great attention to the qualities of a good dark-room, giving some very useful hints with regard to their construction; for developing, a celluloid dish was advised. A discussion followed, and was taken part in by Messrs. Jones, Wrigley, McGowan, and Beesley. All communications should be addressed to the Hon. Sec., Mr. Eustace B. Beesley Rookwood, Brooklands, Manchester.

Devonport.—On the 10th inst. Mr. S. Herbert Fry gave a demonstration on the Sandell plates, at the Odd Fellows' Hall, Devonport, before a combined meeting of the Devonport and Devon and Cornwall camera clubs. Mr. Fry explained that the plates were first coated with a very slow emulsion and then with one or two more rapid coats, the top or most rapid being the same as on the well-known Cyclist plates; and, having drawn attention to the important advantages shown in several prints produced he claimed that with the Sandell plates there was a decided stereoscopic effect both on account of better rendering and because the operator would have less trouble in calculating the exposure, the plates being able to admit of a latitude of 50 to 100 times. Quoting from a Convention paper, Mr. Fry said that the less there was to contend with the more likelihood of artistic work being done. Plates exposed the same day were developed tentatively, a very dilute developer being first applied to bring out the high-lights, the plates being then flooded with a normal developer if necessary. Thomas's Cyclol developer was used by Mr. Fry, but he said that the best to use was the one each person was most accustomed to, but he personally preferred pyro-soda.

East London.—At the general meeting, held on 11th inst., Mr. Stone, Vice-president, in the chair, field days for the month were fixed, viz., July 15th and 17th to Waltham Cross. A letter from Mr Pasco was read, in which he announced his determination of resigning the post of President, which he has held for nearly two years. This was heard with regret by the members, who reluctantly accepted the same. The Hon. Secretary reminded members that at the next meeting, July 25th, the AMATEUR PHOTOGRAPHER Prize Pictures would be exhibited.

Exeter.—A general meeting was held on 11th inst., the President in the chair. Mr. S. Herbert Fry gave an address to a large gathering on the capabilities and advantages of the Sandell plate. The great point that he claimed for it was, not that which most people seemed to attach to it, viz., freedom from halation, but its great powers of storing density—the upper, or sensitive film, giving detail; the lower, or less sensitive, providing density. The latitude of exposure that was practicable was simply immense. In proof of this

he showed prints from plates that had received between four and five hours' exposure. Two negatives—an interior of a Plymouth church and an exterior view of Exeter Cathedral—were developed, to show the powers of the plate, and a formula given for development. The use of a very dilute developer was recommended. Several questions were asked, and the various difficulties explained. On the motion of the President, a cordial vote of thanks was given to Mr. Fry. Announcement was made that it was proposed to hold an open exhibition about Easter, 1894. The President offered a prize for the most artistic picture taken during the present season. The Vice-President offered a second for a similar picture taken on an excursion. The winner of this must have attended three excursions at least. Miss Truscott offered a third for the best moonlight effect, and Colonel Hutchison a fourth, for the best picture of animals in motion. All the prints may be of any size and by any process. It is hoped that these offers will stimulate the members, and that the competition will be more spirited than in previous years.

Goldsmiths' Institute (New Cross).—On 10th inst. this club was favoured by an interesting paper on "Halation," by Mr. A. G. Bloxam. He explained what were the results of Captain Abney's investigations, and that he suggested that backing the plates with red or black paper would reduce the halation. He (Mr. Bloxam) said he himself had not had much success with the Sandell plate, the halation being nearly as bad as on an ordinary one. Mr. Sprunt stated that he thought that halation could not be entirely avoided but might be greatly lessened by backing the plate. It was suggested by another member that if films were used and backed it might reduce halation to a minimum.

Hackney.—Ordinary meeting held 11th, Mr. R. Beckett in the chair. A question was asked, "What is the best way to restore old negatives stained yellow?" Mr. Hudson advised use of weak hydrochloric acid bath. Mr. Moore thought bleaching with mercuric chloride and redeveloping with ferrous-oxalate better. The Chairman said often stains were caused by insufficient fixation. A question was asked as to the approximate exposure for enlarging on slow bromide. The Hon. Sec. said there were many things to consider, such as stop, rapidity of paper, etc. If for lantern enlarging with slow Eastman paper, aperture *f*/4, for a fairly-developed negative enlarging from ¼ to 10 by 8, he would give about two minutes as a standard from which to work. Mr. Harrison had (by daylight) on rapid paper given one minute with *f*/16, enlarging from half-plate to 15 by 12. Mr. Grant advised testing by using one piece of paper and giving varying exposures. Mr. Nunn then read a paper on "Reduction of Lantern-slides." He preferred always to reduce his slides, as grain was lost, and to do them by daylight, as they could be done much quicker. In developing always be clean, have clean dishes, fingers, and filter the developer; dust your plates. He then showed a long tunnel-shaped apparatus which he used for reduction. When using daylight a white reflector was placed so as to reflect evenly on negative. Aim at full exposure and full density; forcing was a mistake; clearing was advisable. Mr. Gosling asked if much advantage was gained by reduction rather than contact, and was informed that every defect was reduced correspondingly. Mr. Perry asked if thin negatives were better than dense ones. Mr. Nunn said he had found them so. The Chairman said copying always sharpened up more than when in contact. The Hon. Sec. thought Mr. Nunn's apparatus too cumbersome, and advised a bellows, as it could be shut up and saves room.

Harringay and Finsbury Park.—On 13th inst. the Vice-President, Mr. F. T. Bennett, presided. A demonstration on "Retouching," by Mr. T. W. A. Ball, was anticipated, but owing to illness this gentleman was unable to fulfil his promise. A discussion on "Dry Plates and Papers" took place. One new member was elected.

Lincoln (Camera Club).—In response to the kind invitation from the Rev. Dr. Stott (President) fourteen members and friends visited Treswell on 8th inst. The party met at the G.N.R. station and proceeded by train to Leverton, where a conveyance was waiting to convey all the cameras, etc., to Treswell Rectory (one and a-half miles distant). The church and stream proved a great attraction to the party, who after spending two or three hours at work (?) sat down to an excellent tea provided by the courteous and popular President. Two gentlemen were proposed and two new members elected. With a hearty vote of thanks to the President and Mrs. Stott the party started to the station about 7.15. Despite the terrific thunderstorm, which raged within a few miles, no rain came to mar the pleasure of the party.

North Middlesex.—At the ordinary meeting held on the 10th inst. the subject of Cresco Fylma enlarging was dealt with by the Secretary. He fully explained the negatives which were most suitable for treatment by this process, and how to go about the actual work of enlarging, and showed numerous examples of successful work: both negatives and positives, opals, transparencies, etc. A most interesting discussion followed, which was sustained by most of the members present. The result of the outing to Sewardstone was that Mr. A. J. Golding was first, the President (Mr. J. W. Marchant), second.

Staffordshire Potteries.—The monthly meeting of the Society was held at Burslem on the 11th inst. The monthly competition prints were on view. The Vice-President, Mr. R. S. Burgess, showed and explained Mr. Dallmeyer's tele-photographic lens. A unanimous vote of thanks was passed to Mr. Dallmeyer for the loan of same, and the Society was of opinion that it placed a new power in the hands of photographers and that the lens has a great future before it.

Tunbridge Wells.—The ordinary meeting was held on the 13th inst., Mr. G. Lewis in the chair. Mr. J. H. Spencer was duly elected a member. Prints and negatives were shown, the result of the excursion to Penshurst Place. Mr. Mann showed a Lizar lamp for either gas or oil, which met with much favour. The meeting was prolonged by an interesting discussion of photographic matters generally, which was much enjoyed.

SOCIETIES' FIXTURES.

July 20—ASTON.—Paper: "My First Experience in Microscopy," Mr. H. W. H. Darlaston.
" 22—LINCOLN (Camera Club).—Outing to Cathedral Cloisters.
" 22—BRISTOL (Camera Society).—Excursion to Weston-super-Mare.
" 22—SOUTH LONDON.—Excursion to Richmond Park.
" 22—WEST LONDON.—Excursion to Greenford.
" 22—MANCHESTER.—Ramble to Marple.
" 22—LEWISHAM.—Outing to West Wickham, Hayes, and Keston. Leader, Mr. Stodart.
" 22—PAISLEY.—Excursion to Ayr.
" 22—OLDHAM.—Ramble to Ashbourne for Dovedale.
" 22—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOCIATION.—Excursion to Richmond.
" 22—GOSPORT.—Excursion to Bishopstoke.
" 22—ROCHDALE.—Excursion to Ingleton.
" 24—LEYTONSTONE.—Council Meeting at the Assembly Rooms, High Road, Leytonstone, at 8 o'clock.
" 24—NORTH MIDDLESEX.—"Notes on Printing," Mr. C. C. Gill.
" 24—GOLDSMITHS' INSTITUTE (Camera Club).—"Practical Hints," Mr. C. Eldridge.
" 25—HACKNEY.—"Exposure Meters and Tables," W. Fenton Jones.
" 25—BIRMINGHAM.—Social Evening.
" 25—P. S. G. B.—Technical Meeting at 50, Great Russell Street, "The Use of Uncorrected Microscopic Objectives with Colour Corrected Plates." Mr. Pringle will introduce the subject, and show specimens.
" 25—EAST LONDON—AMATEUR PHOTOGRAPHER Competition Prints.
" 26—PHOTOGRAPHIC CLUB.—Collodio-Chloride Printing.
" 26—LIVERPOOL (Camera Club).—Picnic Competition.
" 26—BIRMINGHAM.—Last day for sending in Photographs for the Charlecote Excursion Competition.
" 27—UTTOXETER.—Excursion to Dovedale and Ilam.
" 27—NORTHAMPTONSHIRE.—Excursion to Castle Ashby and Whiston.
" 29—HUDDERSFIELD.—Exhibition of Wild Flowers. "Evolution of Fibro-Vascular Bundles," by John Schofield.
" 29—BRISTOL (Camera Society).—Excursion to Brandon Hill.
" 29—STAFFORDSHIRE (Potteries).—Excursion to Churnet Valley.
" 29—MANCHESTER.—Ramble to Taxat and Valley of Goyt.
" 29—OLDHAM.—Ramble to Oldham Park and District.
" 29—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOCIATION.—Excursion to Rickmansworth.
" 29—GOSPORT.—Excursion to Shanklin and Ventnor.
" 29—LEYTONSTONE.—Excursion to Battersea Park.
" 29—HACKNEY.—Excursion to Belvedere Park.

Ambleside.—Ilford, Cadett, and other plates may now be obtained at Mr. Bell's Pharmacy, Waterhead Road, but the price is 2s. 6d., instead of 2s. 3d. for half-plates.

We have received the annual report of the Photographic Club for 1892, which contains as frontispiece a capital bromide print of a group taken at the last outing of the season on Hampstead Heath.

Mr. Alex. Scott, of Apothecaries' Hall, Main Street, Callander, N.B., has just fitted up a good serviceable dark-room, and stocks plates and chemicals. Mr. Scott is himself an amateur, and will be pleased to assist any visitor.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

RULES.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES.

6131. **Bleaching Chloride Prints.**—Please can anyone inform me if it is a known fact that prints on the gelatino-chloride paper can be bleached by adding ammonia to the fixing eolution? I have tried it myself with prints which have been very much over-printed, and have found it to anewer without doing any appreciable harm to them.—W. CLAY.

6132. **Exposure for Sunset.**—Can any reader tell me about what exposure would be necessary about this time of year in taking a sunset photograph, when the sun is just setting on the eea, using a Thomas's extra rapid plate, and stop *f*/22?—F. E. B.

6133. **South of Spain, Grenada, the Alhambra, Cordova, and Seville.**—I propose visiting the above at end of Auguet, and any photographic information will be most acceptable, especially as to obtaining any necessary permission to photograph.—C. NELSON.

6134. **Bromide Paper.** — I wish to tint eome bromide paper enlargements; would some one kindly tell me the best medinm to uee with water-colour paints?—M. W. H.

6135. **Platinotype.**—Will any of your readers tell me how to glacé platinotype printe with little trouble and expenee, and oblige.—PLATE GLASS.

ANSWERS.

6125. **Hand-Camera.**—I am myself transforming for hand-camera fixed-focus work, my quarter-plate brass-bound Instantograph with the aid of F. G. Kettle, box-maker, 9, New Oxford Street. If "E. Z. M." will get a plain box made to measure, it requiree little ingenuity to adapt the inside. The camera must be taken off the stand and placed in the box when the projecting screws lend themselves readily for the pnrpoee of holding the camera-back steady. The camera-front must be either supported by the hole in which the lens is to be fixed, or by brass etanchions as on the etand. If "E. Z. M." ie in or near London I should be pleased for him to see my Patent Hand-Instanto—title copyright, please. If not I will send him a rough sketch. The camera is untouched by any tool whatever, and can be adapted for hand or stand use in two minutes. I was asked 25s. to put the camera into a box, and although I may not turn out such a fine-looking job as a professional camera maker, still I have done it to my satisfaction and the whole thing cost 5s. exactly.—FRANCIS H. WHITE.

6129. **Penmaenmawr.** — Penmaenmawr is one of the pleasant, quiet seaside resorts of North Wales, situated in a beautiful valley noted for ite fertility. I think Penmaenmawr is largely resorted to for ite bathing. A "dip" in the ocean and a eail on ite bosom may be indulged in at all states of the tide; and the walks and drives in the neighbourhood are numerous and attractive. Among the objects to he visited are the Sychnant Pass, quite a Swiss pass in miniature, and the Fairy Glen, with its beautiful cataract. But of course the ascent of the hills ie the great attraction, and this can be easily accomplished without danger, by starting from the chemist's ehop. In this way we reach the heights at a place eminently suited for a picnic party, from which a carriage road leade us to the eummit of Penmaenmawr, past the celebrated Druidical circle, Meini Hirion. Many other Druidical remaine are to be found in the neighbourhood; and Braich-y-Ddinas, a British fort of great strength and of extent sufficient to afford shelter to twenty thousand men, stande on the summit of the mountain. Conveyances leave the village daily for circular tours of forty-eight and fifty-six miles, among the most charming scenery of North Wales. "R. C. L." should visit Llanfairfechan, Aber, and the beautiful cataract of Rhaiadr Fawr. The principal hotels are the "Mona" and "Penmaenmawr." I do not know whether there is a dark-room, because when I was there I had no need for one, Penmaenmawr being not my headquarters.—D. H. W. PREEDY.

QUERIES UNANSWERED.

June 2.—Noe. 6102.
" 9.—Nos. 6106, 6108.
" 16.—Nos. 6109, 6110, 6111, 6112, 6113.
" 23.—Nos. 6115, 6116.
" 30.—Nos. 6118, 6119, 6120, 6121, 6123.
July 7.—No. 6128.
" 14.—No. 6130.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

C. SNOW.—We have forwarded your "bug" on to Mr. Pringle.

G. A. C.—We shall not allow past winners of gold medals to compete with the other competitors for any of our competitions for the future, so you can enter without fear for the fortcoming Photography at Home.

S. T. MERRY.—Your print is much over-printed, and there is rather too much foreground. Enter it and see where you get to.

J. W. SYMONS.—No, our etatement was correct as to the quickest exposures with the shutter, 1-23rd for sky and 1-33rd for foreground, and slower in about the same proportion.

PENZANCE.—We do not quite understand your query, any paper is suitable; possibly a rough paper like Mezzotype would be the most effective.

W. S. T.—We are afraid there is not much to be expected from your epoilt plates, the only thing would be to get the filme off and send them to a refiner, such as Blundell and Co., 162, Wardour Street, Oxford Street, and D. and J. Wellby, 20, Garrick Street, Covent Garden.

G. W.—You muet let ue know what towns in Italy you are going to, and then we can send you list as to where plates can be obtained.

F. E. BIRET.—We ehould say that 12 in. would be about enough with the rapid bromide paper.

FDREE.—Print duly received with thanks.

J. C. MILLER.—(1) We should adviee B. (2) Yes, films can be used, but there might be a chance of sticking. (3) The City Sale and Exchange Rooms, 53, Lime Street, E C. Uee medium Isochromatic plates; that is the main point in copying old yellow manuscripts.

MANFIELD.—Hannam and Co., 25, Soho Square, London, W.

R. ROBERTS.—Half-plate ie the most suitable size, but you must let us know how much you are prepared to epend before we can say more.

J. A. FORRET.—You are quite at liberty to send in the print you mention. The work wae yours, though the hand was another's.

W. H. R. B.—(1) The bath need not be made up fresh every time. Add gold to the old solution with a little soda. Then after the hath has been ueed about six times in this way, add fresh sulphocyanide. (2) You can modify the exposure to suit your own ideas. If you think sixteen minutes too short then give double the exposure. (3) We should class copying and portraits under light interiors.

W. M. HEY.—The action of the citric acid is to make the solution keep better and the action of the developer somewhat slower. This was our reason for using it.

LENS.—The London maker is decidedly the better of the two.

H. E. ILLINGWORTH.—(1) It would certainly be unwise to fix in an acid bath; probably both tone and permanency would be affected. (2) You cannot combine platinum with hypo as a toning bath. (3) One of the simplest formulæ would be—

White hard varnish	5 oz.
Gamboge powder	¼ "

It would be better to warm negative, but not absolutely necessary.

A. C. ASTE.—Your gold is probably acid. Neutralise the gold first by adding about 20 gr. of bicarbonate of soda to it and then add to the sulphocyanide.

BOTANY BAY.—We do not think there is any limit to the prints for Hamburg. We note that this week they offer gold, silver, and bronze medals. The blank for office number we fill up on receiving form and prints, therefore please leave it blank.

H. F. LINGING.—There is no disadvantage in the use of eoda instead of ammonia; in fact, the general opinion is that there is an advantage, as there is not eo much liability to fog. If your lens will not cover, you are at perfect liberty to return it and claim another; but do you mean that the lens will not cover eharply? Write and put us in possession of all the facts of the case.

J. N. K.—Either the plates are stale or else they are drying marks caused in drying the plates.

PAREDAO (Brazil).—Your print has been duly received and entered for competition. We will try and send you a film on, for you to see what a good negative ehould look like.

CHOKER.—We will return both your prints under the circumetancee.

THORNHILL.—The cold-bath process most decidedly.

AMERICAN.—Wash your printe well and eee that the toning bath is alkaline, or make it eo by adding carbonate of soda to it, then try, and let us know how you get on. The acid clearing bath is not necessary when developing bromide paper with Amidol; we should advise the use of the acid fixing bath though.

J. E. HOOD.—(1) The intensifier named is permanent. (2) It is easy to manipulate. (3) Any tone from blackish hrown to rich sepia can be obtained, it being merely a question of ehorter or longer stay in the bath.

MUTE.—(1) The heavy orange precipitate in the gold solution ehould have been well shaken up and added to the other solution, when it would have dissolved. The precipitate in the mixed bath ie unavoidable, and ie eaid to be harmlese. Your print is over-toned. (2) We should say, abandon the use of the combined hath, and use the sulphocyanide, or else fix your prints eeparately after the combined hath. (3) Probably the developer is too strong in caustic alkali; why not stick to your old friend pyro, or else, if you want a new developer, try metol and potash, as recommended a week or so back? Give up your quinol developer altogether.

Sale and Exchange.

RULES.

CHARGE.—*Twelve words or less for Fourpence, Every additional three words, one penny. The name and address of the sender must be paid for. (A single figure, or group of figures undivided by letter, space, stop, or words, counts as one word; compound words count as two words.)*

DEPOSITS.—*Money for goods forwarded on approval may be deposited with the Publishers of the* AMATEUR PHOTOGRAPHER, *who will hold the amounts deposited until they are satisfied that the transaction has been completed to the satisfaction of buyer and seller.*

COMMISSION.—*A charge of 2½ per cent. will be deducted from all deposits whether a sale is effected or not. Minimum charge 1s.*

PAYMENT.—*All payments are to be by cheques or Postal Orders, made payable to Hazell, Watson, and Viney, Ld., 1, Creed Lane, London, E.C.*

PAYMENTS *should be made in Postal Orders or Postage Stamps.*

ADDRESS.—*All advertisements (which can be received up to Tuesday mid-day) and other communications having reference to the Sale and Exchange column, must be addressed "Sale and Exchange,* AMATEUR PHOTOGRAPHER, *1, Creed Lane, London, E.C."*

Cameras, Lenses, etc.—Quarter-plate mahogany camera, double dark slide, instantaneous lens, bargain, 22e.; approval. Write, Zoka, 498, Harrow Road, W.

Watson's whole-plate Premier camera brass-bound, three double slides, Eastman rollholder film (forty exposures), leather case. Rose whole-plate R.S. lens, Wray landscape 9 by 7, Optimus wide-angle, Lyon's shutter, price £21.—Fryer, Priory, Chatteris.

Lancaster's Guinea Omnigraph, quarter-plate, practically new.—Mise Larken, Burton Rectory, Lincoln.

Beck's camera, for hand or stand, lene, eix double slides, focussing, cost 12 guineas, £6.—H. Lee, Thornhurst, Wolverhampton.

Taylor's 5 in. detective lens, *f*/5, iris diaphragm, new cost £3 17s., price £2 16s.; half-plate reversing back, six Sands and Hunter film slides, £1 5s.; 10 by 8 enlarging camera, mahogany slide and focussing screen focusses 4 ft., £1 5s.—John A. Hodges, 39, Fairlawn Park, Chiswick.

Hand-cameras, etc. — Adams and Co's No. 1 Ideal hand-camera in perfect condition, £5 10s.—Mantz, Sydenham Rise, Forest Hill.

Quarter-plate hand-camera, built to special order, regardless of cost, by Newman and Guardia, fitted with Dallmeyer's patent detective (Jena glass) rectilinear lens working at *f*/5·6, fitted with iris diaphragm and Newman's diaphragmatic shutter, capable of time or inetantaneous exposures down to 1-300th part of a second, rising and falling front, swing back, facilitiee for using single combination of lens, shaded and open view finders, three magazine backs (two spare ones provided with leather cases and slings) each carrying twelve plates or cut films at option, focussing glass, focussing lever and index to distances from 3 ft. to infinity, all in mahogany box, covered with morocco, and provided with leather travelling case; also folding tripod with self-contained head canvas cover, and sling, cost over £40, in excellent condition, price £20 net.—E. R. Shipton, 140, Fleet Street, E.C.

No. 1 Kodak, with several unexposed films, for sale, nearly new, cost £5, will take 50s.—T. Bedding, "The George," Pangbonrne, Berks.

Griffiths' 23s. 6d. (extra finder), very little used, new May 6th last, will take 16s.—C. B. Beaumont, "Ochaya," 5, North Gate, Bath.

Guinea hand-camera for sale, nearly new, three extra slides, 12s., approval. Specimen of work sent.—W. Smith, St. Loyes, Bedford.

Talmer hand-camera, splendid condition, carries twelve plates, with rapid rectilinear lens, large finders, rotating stops, spirit level, time and instantaneous shutter, take £3 lowest.—Charles Ison, Hughenden, Bedford.

Rouch's Eureka detective camera, quarter-plate, special regulating shutter, £4 4s.—No. 419, office of paper.

Talmer 3¼ by 2¾ hand-camera, 12s. 6d.; Stirn circular camera, 17s. 6d.—Elliott, 427, Kingsland Road.

5 by 4 Regular Kodak, quite new, complete with case and forty-six exposures, cost over £10, will take six guineas.—John L. Cuff, Millington, near Altrincham, Cbesbire.

B Kodak Junior, qoite new, carries twenty-four films leather case for same, also Tylar's ruby lamp, bargain 40s., cost 54s.—F. Wheeler, 28, Head Street, Colchester.

Kodak, No. 3 Regular, new, 100 exposures, 45 used, cost £8 10s., price £6.—J. T. Hunt, Bayview, Dungarvan, Connty Waterford.

Kodak No. 5 folding, in perfect order, cost £13 10s., sell for £10, deposit.—Mrs. Pritchard, Rushmere Lodge, Leigbton Buzzard.

Frena band-camera, scarcely used, about twenty films, price £4 5s.; also 10 by 8 landscape lens, works *f*/8, price 20s.—Pain, Kingswood, East Sheen, S.W.

Lenses, etc.—Lancaster's whole-plate lens, iris diaphragms and shutter, cost 42s., will take 35s or offers.—Y, Walton, Crown Street, Hebden Bridge.

Half-plate extra rapid rectilinear lens, exquisite definition, iris diaphragms, detachable hood, works *f*/8, eonal new, 27s. 6d., worth double, bargain; approval —Photo, 10, High Street, Harlesden, N.W.

Giving up photograpby. Will sell whole-plate rapid rectilinear lens, 20s.; half-plate, 15s., cash; letter only.—Ridge, I, Williams Place, Kensal Green, London.

Whole-plate or 9 by 7 R.R. lens, iris diaphragms, finest condition, definition perfect, accept £2. Particulars, Iris, 121, Shirland Road, London, W.

Lancaster's half-plate lens and shutter, 16s. 6d.; three half double instantograph dark slides, 6s. 9d. each; three-fold stand, 9s. 6d.; approval; will exchange for cushion safety bicycle.—Adams, Hermitage Mews, South Tottenham.

Lerebours' whole-plate portrait lens, not scratched, will accept £2 cash, or exchange to £3.—G. Brown, High Street, Ibstock, near Ashby-de-la-Zouch.

Sets.—Camera, etc. Lancaster's 42s. half-plate Le Merveilleux, nearly new, lens, dark slide, and extra carrier for quarter-plate, tripod, and focussing clotb, 32s. casb.—C. Beaumont, "Ochaya," 5, North Gate, Bath.

Lancaster's whole-plate International camera, instantaneous leus, patent shutter, four double dark slides, stand, good condition, price £6, bargain.—Fletcher, 99, Great Hampton Street, Birmingham.

Lancaster's 1892 half-plate Instantograph camera with instantaneous lens and shutter, stand, three double dry slides, carriers, dishes, printing-frame, etc., in good condition, price £5.—St. Clair, Wymondham, Norfolk.

Stereos. Apparatus.—Stereoscopic camera, lenses, and single slide, 16s. 6d.—Thornton, 15, Bromley Road, Beckenham.

Studio.—Studio for sale, £4, now taken down, easily re-erected, size 20 ft. by 10 ft.—Apply S., 95, Haldon Road, Wandsworth.

Sundries.—Working electric motors, will work with two bichromate cells, different types, beautifully finished witb pulleys, 10s. each; smaller sizes, very pretty, 5s. each; very powerful induction coils for one cell, 5s.—A. Gilder, West Drayton, Middleeex.

Gas-lamp, Reynolds and Branson's latest pattern, in excellent condition, cost 15s., offers wanted.—No. 417, office of this paper.

Violin, splendid instrument, Guillaume bow, and case value £3, in exchange for camera, approval.—Wrate, Ford Street, Nottingham.

Countess half-plate camera, Lancaster's rubralux lamp, chronolux shutter, Rectigraph lens, Watson's meter, leather case, Unirecal stand, Ilford Iso screen, Taylor's finder, plain background 8 by 8, other accessories; £10 the lot, cost £25.—7, Edwards Road, Burdett Road.

WANTED.

Backgrounds.—Interior or landscape backgrounds wanted, cheap for cash, send photos. A half plate Lancaster's patent diaphragm lens, witb instantaneous shutter, as new, cost 30s., cash 21s. or exchange.—Jones, 74, Rodwell Road, East Dulwich, London.

Cameras, etc.—Wanted, Lancaster's or Underwood's half-plate instantograph, in exchange for good ⅔ in. spark intensity coil, new five-candle dynamo and small bench latbe, only used few times.—Will am Burgess, Trinity Street, Old Hill, Staffordshire.

Lancaster's 1892-3 quarter Instantograph or other good make, must be cheap.—76, Exmouth Street, Stepney, E.

Camera wanted, half-plate, three slides, well-known maker.—No. 418, office of paper.

Cameras, Lenses, etc.—Wanted, good half-plate camera with lens and slides complete.—Wilmore, Brigg.

Dark Room.—Wanted, portable dark-room, cheap. G, 195, Portsdown Road, W.

Hand-camera, etc.—Wanted, No. 3 Kodak, must be in good condition and cheap.—Jaques, Lansdowne, Putney, London.

Wanted, No. 1 Platinotype Key hand-camera, deposit, approval. Lowest price to—Miller, Mortimer, Berks.

Wanted, a Frena hand-camera by Beck; approval, deposit.—Lambert, Photographer, Bath.

Hand-camera, etc., witb two view-finders, perfect working order, for plates, lowest price; approval; 12 by 10 camera, complete, state all particulars, on approval; No. 5 folding Kodak latest, platebolders, etc., complete, approval.—Gray, Photographer, Stevenage.

Lenses, etc.—Wanted, quarter-plate changing box and pair stereo lenses.—Max Mills, 34, Great Elms Road, Bromley, Kent.

Wanted, Wray's 6 in. wide-angle rectilinear lens, whole-plate or Dallmeyer, Ross.—F. Mills, Challow Station, Faringdon, Berks.

Wanted, quarter lens, Lancaster's Merveilleux, Meritoire, or other make; approval.—Walls, Gladstone Road, Neston, Cheshire.

Printing-Frame.—Printing-frame to print Paget's half-plate opals, state price to—Beta, 37, Walbrook, E.C.

It is unnecessary to send an advertisement for the "Sale and Exchange" column for more than one insertion, as the goods are usually disposed of when the first advertisement has appeared.

Bijou Enlarging Lantern.—Patent rectangular or square oondensers used by Van der Weyde and other eminent photographers, reduces size nearly half; portable, unique, scientifically constructed, beautifully made, and optically correct.

Bijou Enlarging Lantern is the only perfect enlarger, high-class lenses and workmanship.

Bijou Enlarging Lantern, new design, take negatives all sizes, gives nniform illumination. Every amateur and photographer should possess one. Gives unirecal satisfaction. Enthusiastic testimony everywhere. Prices with or without objectives sent on application. Cbeapest and best. Hughes, Brewster House, Mortimer Road, Kingsland, London, N. Before purchasing any lantern get our grandly illustrated Catalogue, a surprise when seen; over 180 choice wood-blocks of the finest and cheapest instruments extant, 6d., postage 3d.

Bargains in Cameras and Sets.—Whole-plate Spanisb mahogany camera by Douhtlet (Moorgate Street), back and front extension, rising front, swing and reversing back, leather bellows, fitted Optimus rapid euryscope lens, Waterhouse stops, works *f*/6, Newman's time and instantaneous shutter, three double book-form slides, in solid leather case, and two-fold stand, grand lot, £12 10s.; Whole-plate Lancaster special brass-bound Instantograph, double extension leather bellows, rising front, reversing and swing back, fitted Lancaster's lens, iris stops, shutter, two double book-form slides, and folding stand, £6 17s. 6d.; Watson's 7½ by 5 Acme camera, double extension leatber bellows, rising front, swing and reversing back, wide-angle movement, turntable, fitted Wray's narrow-angle landscape lens, iris stops, 12 in. focus, three double book-form slides, Thornton-Pickard time and instantaneous shutter witb speed indicator, three-fold ash tripod, and solid leatber case, etc., etc., grand outfit, £10 10s., cost £17 17s.; half-plate camera by Percy Lund, double extension leather bellows, rising front, swing and reversing back, fitted rapid rectilinear lens, Waterhouse stops, three double slides, and folding stand, £3 15s.; half-plate patent collapsible camera, double extension leatber bellows, rising front, swing and reversing back, wide-angle movement, very light, width when closed 2 in., fitted very fine rapid rectilinear lens, iris stops, three double book-form slides, and three-fold stand with lower sliding joint bargain, £6 6s.; ½-plate Optimus rapidograph camera, double extension, best leather bellows, reversing and swing back, rising and falling front, fitted three best double book-form slides, metal divisions, clips and catches, Laverne's best aluminium rapid rectilinear lens, iris stops, works *f*/8, three-fold ash tripod and case, warranted as new, £7 17s. 6d.; quarter-plate camera by Ross, square leather bellows, rising and cross front, swing back, reversing, fitted Optimus rapid rectilinear lens, Waterhouse stops, three double book-form slides, with patent light-tight joints and catches, in solid leatber case, and two-fold stand, grand lot, £6, cost £10 10s.; Lancaster's ½-plate special brass-bound Instantograph, double extension leather bellows, swing back, etc., three Tylar's medal and one mahogany dark slides, fitted Lancaster lens, iris stops, and see-saw shutter, and folding stand, £2 5s. All above sets guaranteed as described in every detail. On view, City Sale and Exchange, 54, Lime Street, corner Leadenhall Street, City (late Goy's Medium). Second-hand apparatus bought, sold, or taken in exchange. Inspection invited.

Bargains in Lenses.—Wray's 18 by 16 narrow-angle landscaps lens, Waterhouse stops, diameter of lens 3¼ in., focus 25 in., condition as new, £4 4s.; Dallmeyer 1A wide-angle rectilinear lens, size whole-plate, 5½ in. focus, rotating stops, finest condition, £3 15s.; whole-plate Ross's rapid symmetrical lens, fitted Waterbouse stops, grand definition, covers well, focus 10½ in., good condition, £4 15s.; Underwood's whole-plate rapid rectilinear lens, iris stops, best condition, £2 15s.; Optimus 3B quick-acting portrait lens, fitted Waterhouse stops, works *f*/4, focus 10 in., diameter of lens 3½ in., condition as new, £7 12s. 6d.; 8 by 5 Grubh aplanatic doublet lens, fitted Waterhouse stops, works *f*/8, best condition, £3 15s.; Ross's No. 4 portable symmetrical lens, rotating stops, 6 in. focus, quite new, £3 3s.; half-plate R.R. lens by Negretti and Zambra, Waterbouse stops, works *f*/8, grand definition, covers well, fitted Optimus patent plunge shutter for time and instantaneous, finest condition, £2 5s.; Optimus 7 by 5 rapid rectilinear lens, Waterbouse stops, works *f*/8, and fitted Optimus plunge shutter, pneumatic release, as new, 60s.; Optimus 5 by 4 rapid Euryscope lens, Waterhouse stops, works *f*/6, best condition, 50s.; Laverne's 5 by 4 rapid rectilinear detective lens, Waterbouse stops, works *f*/7, finest condition, 17s. 6d.; Ross' No. 1 symmetrical lens, 3 in. focus, rotating stops, size 5 by 4, finest condition, 42s. 6d.; Wray's 5 by 4 Casket landscape lens, 5, 7½, and 10 in. focus, iris stops, condition as new, £3 15s.; 5 by 4 rapid rectilinear by Watson, Holborn, fitted iris stops, works *f*/8, movable hood, as new, 45s. On view, City Sale and Exchange Rooms, 54, Lime Street, corner Leadenhall Street, City. Second-hand apparatus bought, sold, or taken in exchange.

Bargains in Hand Cameras.—B ordinary Kodak, fitted landscape lens, sbutter, finder, carries films for 24 exposures, complete in solid leather case, finest condition, 37s. 6d.; Lancaster's Omnigraph hand-camera, good lens, See-saw shutter, finder, carries six quarter-plates, best condition, 16s.; Rover hand-camera, fitted Lancaster lens, See-saw shutter, finder, carries twelve quarter-plates, in leather case, 45s.; Frena hand-camera, fitted Beck's rapid rectilinear lens, time and instantaneous shutter, finder, loaded twenty films, covered morocco leather, finest condition, £4 5s.; Optimus detective hand-camera fitted optimus rapid rectilinear lens, time and instantaneous shutter, two finders, adjustable focus, three double slides, covered leatber, £4 7s. 6d.; No. 2 Kodak fitted rapid rectilinear lens, time and instantaneous shutter, carries 100 films, finder, coverod leather, in leather case, £3 17s. 6d., cost £7; Adams' Otto hand-camera, fitted landscape lens, time and instantaneous shutter, two finders, carries twelvo quarter-plates, covered leather, best condition, 40s.; half-plate Shew's Eclipse hand-camera, fitted Shew's rapid rectilinear lens, rotating stops, Shew's patent sbutter, four double slides, book form, complete in waterproof case, £5 17s. 6d.; Talmer's hand-camera, fitted rapid rectilinear lens, time and instantaneous shutter, two large finders, carries twelve quarter-plates, bag changing, quite new, £4 5s.; No. 1 Kodak, fitted rapid rectilinear lens, time and instantaneous shutter, carries 100 films, finder, in leather case, 37s. 6d., cost £5 5s.; Talmer hand-camera, landscape lens, rotating stops, two large finders, carries twelve quarter-plates, bag changing, 55s.; King's twin-lens hand-camera, very fine landscape lens, time and instantaneous shutter, full-size finder, automatic changing, carries twelve quarter-plates, perfect condition, 27s. 6d. All above are warranted as described. On view, City Sale and Exchange Rooms, 54, Lime Street, corner of Leadenhall Street, City (late Goy's Medium). Second-hand apparatus bought, sold, or taken in exchange. Inspection invited.

SECOND-HAND CAMERAS AND LENSES, etc. The best place to buy Second-hand Photographic Apparatus is SANDS, HUNTER, & CO., 20, Cranbourn Street, Leicester Square, London, W.C., who only deal in reliable and best quality apparatus. Approval allowed on all goods, with deposit. Cameras and Lenses, by good makers, bought for cash or exchanged, also set out on hire. Send for Catalogue, gratis and post-free. *Please quote this Advertisement.*

IMPORTANT TO AMATEURS.—Developing, Retouching, Printing, Enlarging, etc., etc. Highest-class Work and Moderate Charges. —**WILFRED EMERY, 24, South Street, Baker Street, W.** Full Price List, post free.

FOR DISPOSAL.—PHOTOGRAPHIC APPARATUS AND MATERIAL BUSINESS, in large Manufacturing Town. Splendid opening for one introducing Spectacle Trade and Lantern Slide Hiring. Central position; rent low; stock optional. Satisfactory reasons for selling.—Address, "Business," care of Advertisement Department, 1, Creed Lane, E.C.

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 460. Vol. XVIII.] FRIDAY, JULY 28, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—Our Competitions—Photography and Exploration—Photography *v.* Sketches — Topographical Studies — Hand-Cameras at the Seaside—Different Styles of Working—The Brilliancy of the Light—A Convention Souvenir.

Flotsam and Jetsam, by Anchorite.

Articles.—The Platinotype Cold-Bath Process (Brewer)—Telephotographic Systems of Moderate Amplification (Dallmeyer)—The Elements of Photo-Micrography (Mikron)—Les Petit Metiers and Photography (Duchochois).

The Photographic Convention.—On the Power of Compensating in Development for Variation in Exposure (Burton)—Remarks on Prof. Burton's Paper (Elder).

Letters.—Some Points in Connection with Development (A. H. G).

Holiday Resorts.—King's Norton (Preedy).

Societies' Notes.

Societies' Fixtures.

Societies' Meetings.—Brixton and Clapham—Hackney—Leicester—N. Middlesex—S. London—Stockport.

Apparatus.—The Pilsen Electric Lamp—Hannam's Mounts.

Catalogues.—P. Lund and Co.—Vevers—T. Scott.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

United Kingdom.....	Six Months, 5s. 6d.	Twelve Months,	10s. 10d.
Postal Union	" " 6s. 6d	" "	13s. 0d.
Out of Postal Union ..	" " 7s. 9d.....	" "	15s. 3d.

TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 51, Seascape and River Scenery.—Latest day, August 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, **Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement,** September 1st, 1893.)

We would remind our readers that the "Photography at Home" Competition closes on 31st inst., and that all prints should be in our hands on that date if possible, as we cannot further extend the time. Entry forms for our Annual Lantern Slide Competition are now ready, and will be forwarded on receipt of stamped addressed envelope.

Photography has now become a necessary adjunct to exploration work. Lieut. Peary, the Arctic explorer, took with him on his last trip a Kodak, and was successful in making about 2,000 good negatives, and he has now started again with no less than five Kodaks and 2,500 extra films. It is to be hoped he will be able to bring back some good results.

Mr. Johnson, another well-known explorer, is also taking to Labrador a Kodak and extra films, whilst Dr. Nansen has taken with him on the *Fram*, his vessel, built specially for Arctic exploration, a Kodak and half-plate roll-holder and over 1,500 extra films.

It cannot be denied that a photograph of any country must be infinitely more truthful and interesting than any amount of sketches. In the latter there is always the personal equation to consider, but apart from this have we not to consider the rapidity with which a number of exposures can be made, whilst it would take some time to make the sketches?

This is, of course, nothing more than extending to exploration work the use of the camera in the same way as it is used at home here by so many of our readers for obtaining what are sneered at so often by the would-be artists as topographical studies of places that they visit.

It is possible for some to turn out pictures even under such conditions, but when holiday making, picture making is ignored for the time being.

At the seaside especially the hand-camera is strongly *en evidence*, and at a well-known watering-place on the south coast this last week we saw, in one morning, seven, besides two stand cameras, and we were much amused at the different style of working.

There was the calm, deliberate man who set his index and shutter, coolly walked past his intended victims, turned, and at the proper distance fired, without hardly stopping his walk, and without using a finder. Then the nervous man who fidgetted first with his shutter, then his focusing index, and shaded his

finder with his hand, shifted his position, and having generally attracted the attention of everybody made his shot and walked off in high glee.

THEN there was the gentleman with a hand-camera, with fixed focus and magazine, who fired at everything promiscuously. We stalked him and quietly watched his proceedings. He made eleven exposures in less than half an hour, five of them with the sun dead in front of him so that he could only get the shadow side of his objects anyhow. He then went off, and we saw him at it again in about an hour, and therefore presumed he had been to change.

BUT the best experience we had was certainly when we took down a hand-camera and carelessly looked on, whilst some one with a half-plate outfit posed a group of fishermen laying their nets out in the sun to dry. We had made an exposure giving about one-tenth of a second with *f*/11 before he had begun, and then coolly waited till he was ready to move on, when we tackled him, and found to our astonishment he was using the same plates as we were, and had given four seconds exposure with *f*/8. Now, as we have developed our plate and found that we have got a good negative, we wonder what his results will be like.

FEW recognise how extremely brilliant the light is at the sea-side. It is possible to give there far shorter exposures or to stop down more than for any inland scene. It is possible, nay, some good workers strongly recommend always using ordinary plates for sea-side work, but this we do not hold with. We always use the most rapid plate we can get, and stop down a little more than usual, and we should recommend this in preference. The extra rapidity may not always be needed, but it is an advantage to be able to stop down more and drive the shutter at the highest speed if required.

THE Convention has, as usual, brought in its train several interesting souvenirs of the happy meeting, and one of them to hand this week is an enlargement by Messrs. Morgan and Kidd on their rose-tinted bromide paper, which for definition and delicacy of detail would be hard to beat.

Flotsam and Jetsam.

THE amount of activity that has been shown this year in the projection and the floating of new journals of every sort and size has been phenomenal. One of the latest is *Commerce*, an illustrated weekly, which has made an exceptionally bright and promising start. It has adopted without reserve the style and the methods of the new journalism, and goes in boldly for interviews and all such forms of attraction.

ITS latest issue contains an interview with Sir Gilbert Carter, the Governor of Lagos, the chief interest of which lies, if the phrase may be permitted, in its illustrations. There are reproductions of several photographs of this little corner of the British empire, some of them taken by the Governor himself, and very funny they are.

THE awe-struck look on the faces of some of the natives, Yorubas mostly, suggests their fear of the camera, and in one picture of the reception of the Governor by the King, the blurred outlines evidently show a disposition to dodge on the part of some of the attendants of his most gracious majesty the King of Yorubaland, though he himself sits in stately fashion enough.

To the outsider, one of the most interesting pieces of evidence tendered at the court-martial on the loss of the *Victoria* last week, was the production of the instantaneous photograph of the sinking ship taken by an officer on board another ship in the fleet. A print of this has also appeared in the windows of the office of a contemporary in the Strand, and has excited as much attention there as it did in court.

THE ill-fated vessel is shown with her stern in the air and screws revolving, while from the disturbance of the water it seems as if the plate had been exposed just at the moment when the explosion took place. It is more than interesting to have this clear and unimpeachable record of the scene, especially in view of the confusion that renders the accounts of eye witnesses so varied. But conceive the coolness of the officer who took it!

MR. GEORGE A. PARDOE, an ingenious correspondent of the *Engineer*, thinks that photography may play some small part in helping to raise the *Victoria*, by enabling us to gain an accurate idea of how she lies now, and in what condition. He says his suggestions have been rejected by the Admiralty, and his confidence in them, nevertheless, reminds one of Mr. Zangwill's humorous remark about one of his books, that it had not been successful "although it had been refused by all the best publishing houses."

Bref, the plan is to send down to the grave of the *Victoria* three cast-iron cylinders, with glass bottoms, a camera in the centre, and an arc lamp in each of the two outer ones. By various contrivances Mr. Pardoe thinks that in this way a photograph of the ship might bo obtained. He admits difficulties as to focussing, but is still of opinion that "fairly good results might be looked for." We are inclined to agree with the Admiralty.

BASE are the uses of photography sometimes. *Invention* tells how an American—it is always those Americans—advertised that he was about to photograph his "store," and invited all and sundry to be present, so that they might appear in the picture. This, he announced, would entitle them to a free copy of the print. Of course, they came in great numbers, and the proprietor so arranged the printing that most of them had to call more than once before they got their promised photograph! It was good business for the store.

THERE lies before us now a snap-shot taken by an amateur on Brighton beach within the last day or two. There are a few fishing boats idly rocking out on the rippling sea, their brown sails standing out in startling clearness in the pellucid air. And the very curl of the wavelets about to plash on to the pebbles is seen, so that one can almost hear the music of their fall. There should be few places better than Brighton for pictures of this kind.

BUT this shot was not aimed at the boats, nor at the wavelets. They could not help coming in, for these things are inevitable at Brighton. It was aimed with malicious intent at a corpulent bather, a very Tichborne, a natatory Daniel Lambert, coming painfully up out of the water after his morning dip. The beach at Brighton is of pebbles and not of sand, and alas for the man with tender feet who has to walk far to his machine!

WITH widely planted feet, seeking in vain for a soft stone, with swaying arms, contorted body and rueful face—there never was a more comic object. And fat men seem fond of bathing at Brighton, so that the amateur who wishes for a few funny plates, or some laughter-moving lantern-slides, cannot do better than go there to secure a few of them. ANCHORITE.

Letters to the Editor.

SOME POINTS IN CONNECTION WITH DEVELOPMENT.

SIR,—I have perused with interest Mr. Bothamley's paper read before the Convention, on the above subject, and agree with him that it is possible, without altering the density ratios, to secure negatives of widely different character as regards gradation by merely prolonging or curtailing the time of development.

But when he comes to the consideration of "fog" I cannot help thinking (I may be in a "fog" myself) that he falls into the same error he pointed out a few paragraphs before. In tracing the effect of general fog on the opacities of a negative he states :—"Since to add a constant quantity to the terms of a ratio diminishes the ratio, it is clear that the fog will lessen the ratios of the opacities, and thus tend to make the negative flatter or softer."

Surely it is the *density* ratios which are diminished, not the opacity ratios.

For example, suppose the following to be the condition of a negative after eliminating the action of fog :—

Thickness of Deposit (due to exposure only).	Quantity of Light Transmitted or Opacities.	Ratios of Opacities.
0	1	32
1	$\frac{1}{2}$	16
2	$\frac{1}{4}$	8
3	$\frac{1}{8}$	4
4	$\frac{1}{16}$	2
5	$\frac{1}{32}$	1

Supposing the fog to amount to a uniform deposit of, say, density 1, then the actual condition of the negative would be :—

Thickness of Silver Layer (due to exposure and fog).	Quantity of Light Transmitted or Opacities.	Ratios of Opacities.
1	$\frac{1}{2}$	32
2	$\frac{1}{4}$	16
3	$\frac{1}{8}$	8
4	$\frac{1}{16}$	4
5	$\frac{1}{32}$	2
6	$\frac{1}{64}$	1

Thus it would appear that, provided the exposure falls within the limits of correct exposure, the presence of fog does not alter the opacity ratios—*i.e.*, the relative gradations—but only makes the negative slower in printing.

I must confess I regard this conclusion somewhat sceptically myself, but as it seems to be a direct inference from Messrs. H. and D.'s theory, I should like to see the matter discussed by more capable men than myself.

I should like to ask Mr. Bothamley whether it is absolutely certain that fog is "a *uniform* deposit of silver all over the negative." It seems natural to conclude that the amount of fog developed in any given time is determined or controlled, to a certain extent, by any previous exposure the plate may have received. If, for instance, the fog was not distributed evenly over the surface, but was greatest in the shadows and least in the lights, in fact, an inverse function of the exposure or density, then the effect would accord better with general experience. That is, the presence of fog would lower contrasts and make the shadows flat and weak without adding materially to the opacity of the high lights. I offer this only as a suggestion, but as far as I have examined such a law of fog action I do not think it would clash with the law of density ratios. Trusting any error I may be committing will be speedily explained by your more capable correspondents, I am, yours, etc.,

A. H. G.

Messrs. Adams and Co.'s employes had a most successful and enjoyable day's outing at Holmwood, near Dorking, on Saturday, the 15th inst. A closely-contested cricket match was the principal morning attraction, and various sports were afterwards indulged in. A number of traps and waggonettes conducted the party to enjoy the surrounding scenery. The whole of the staff, numbering fifty, assembled at dinner at mid-day, Mr. Arthur L. Adams presiding. He spoke of the remarkable growth of the business, which, although only established but seven years, he now regarded as the very first business of its kind in the United Kingdom. He also dwelt upon the loyalty of the employes generally, who by their constant interest in the business had succeeded in placing it in so important a position. Various toasts and songs concluded the programme. At each annual dinner the number of employes has been increased, and annually it has been the enviable position of the Chairman to record at the same time the largely increased and extended business.

The Platinotype Cold-bath Process.*

By J. V. Brewer.

At the outset I wish it to be understood that I do not pretend to any intimate knowledge of the chemical properties of the paper, which may be safely left to experts, nor can I claim very extensive experience in the manipulation thereof, but I must admit that printing in platinum has for me, from many points of view, great charm, and I trust that the results which I can show may induce such of the members of this Society, who have more leisure than I at present have at my disposal, to further practice and become perfect in this beautiful and artistic style of reproduction. There are, to my mind, but two other processes able to approach platinotype, viz., photogravure and carbon printing. As to the exact salts with which the papers are coated, I believe the chloro-platinite of potassium in combination with ferric-oxalate are chiefly used. Ferric-oxalate is sensitive to light, and by the action of light becomes reduced to ferrous-oxalate. One of the properties of ferrous-oxalate is that in solution it has the power of reducing chloro-platinite of potassium to metallic platinum. Oxalate of potash or kindred alkalies which compose the developer of these papers will dissolve ferrous-oxalate, and this in turn reduces the chloro-platinite of potassium to metallic platinum, forming the image of a platinum print, the unused portion of the iron salt being dissolved out by the acid bath. The foregoing brief outline of the process shows the extreme simplicity of this method of printing. Platinum is undoubtedly one of the most stable and unalterable metals known to chemists, and in the very fine state of division in which we find it in a platinum print is of a rich, pure black, unaffected by light, and insoluble in hydrochlorio or other acids—thus ensuring permanency. This quality is undoubtedly of high value, though its simplicity of working, its artistic colour, and the soft effects producible by it, quite overshadow, in my estimation, all other good qualities. To obtain an artistic print by any process, it is necessary to devote considerable study to the produotion of the negative most suitable to it, and the samples which I have here will to some extent explain the quality of negatives most suitable to the process under consideration. True artists admire a perfect platinum print as a thing of beauty in monochrome, while it is the envy of the mediocre painter who daubs on the canvas his abominable greeny-yellowy colours in sections like a child's puzzle, which colours externally refuse to blend together and can only be softened down by prolonged contact with the fuliginous atmosphere of the kitchen chimney. Some of the older generation of photographers were somewhat incensed at Mr. Guardia's remarks at the Plymouth Convention *re* Art Productions with the Hand-camera, and claimed that equally good work was done by some of the early and earnest workers as by those of the present day. That is undoubtedly true; but, however technically perfect their collodion negatives with their false shadows of absolutely clear glass may have been and probably were, the photographers of old were almost confined to printing in silver and lacked such splendid processes of reproduction as present workers may revel in, first and foremost among which I place the platinotype. Having said thus much to express my admiration for the process, I will give a few details as to the working of the paper, etc. Firstly, the paper *must* be kept perfectly dry before, during, and after printing. Secondly, the negatives should be, in my opinion, fairly dense, but soft, with details to suit the subject, and free from stain, especially yellow, to which colour the paper is but slightly sensitive, in consequence of which the development may be carried on by gaslight; and so simple and cleanly is the process that you may, with the cold bath, perform the necessary operations in your own dining-room (if you can get the requisite permission) without the slightest detriment to the furniture. Thirdly, in printing it is necessary to back the paper with a thin sheet of vulcanised india-rubber, and by all means varnish the negative. Print till a faint grey image appears, as if embedded in the lemon-coloured sheet with a thin veil or film over it—a softness characteristic of the process without hard or decided lines obtruding themselves. In working the process it is not necessary to tie yourself down by inexorable rules (except with regard to the exclusion of damp), but every worker with intelligence may vary the composition of the bath, or the extent of the printing to obtain different effects of tone ranging from silver-grey to exquisite blacks full of transparency. I would advise beginners to print till the shadows and half-tones are faintly discernible, and to have two developing baths; one much diluted, and the other of normal strength. Draw the face of the print over the surface of your first very dilute bath, and if the effect desired is obtained, plunge the print into the acid bath to prevent further action, but, if through insufficient printing or weakening of No. 1, the desired end is not obtained then resort to the stronger bath, and complete development on that.

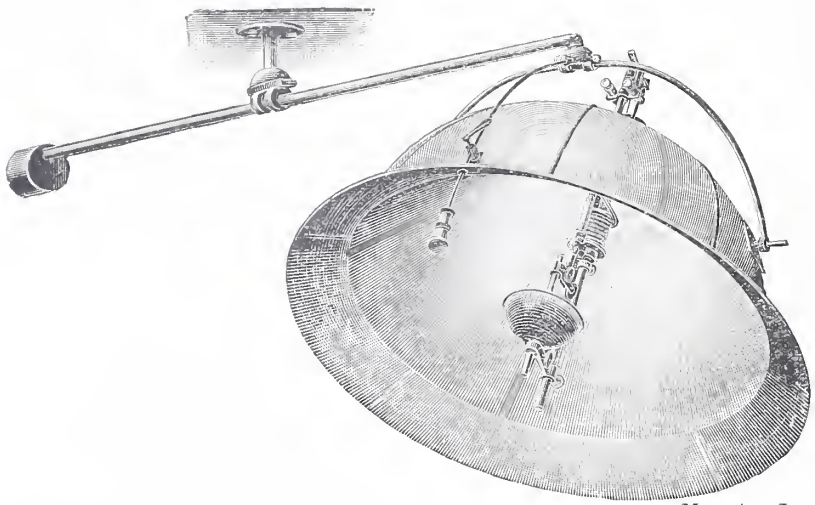
Mr. Brewer followed up his paper by developing several prints with excellent results.

* Read before the North London Photographic Society.

Apparatus.

THE PILSEN ELECTRIC LAMP.

GWYNNE and Co., of Brook Street Works, Holborn, E.C., are the makers of this lamp, which we had an opportunity of seeing the other day. It is constructed either for continuous or alternating currents, and, as will be seen from the illustration, is a lamp inside a basin-shaped reflector, which is painted white; the light itself is screened by a small reflector which reflects the light on to the white surface, so that none but soft diffused light falls on the sitter or sitters. The steadiness and noiselessness of the lamp are remarkable, and as, when once started, the light is perfectly automatic, being electrically controlled, it is perfectly simple, and requires no special electrical knowledge. It can be readily shifted about, being suspended at one end of a long bar with counterweight.



We also saw a lamp specially arranged for printing, which would be of enormous advantage to professionals and large firms who have a lot of printing to do. Another lamp is specially designed for enlarging, and in this we have the ideal of all enlarging lights, viz., a spot of light.

The system is good and reliable, and by no means exorbitant in price, and will fulfil every requirement of the professional photographer.

HANNAM'S MOUNTS.

Hannam and Co., of 25, Soho Square, W., have sent us samples of their new cut-out mounts for gelatino-chloride prints, which entirely obviate the necessity of mounting, the print being slipped in somewhat after the fashion of the old albums. These should find considerable favour amongst all workers of chloride papers. They may be had in all colours, and either with gold or plain bevelled edges to the cut-outs.

The same firm also send us some very fine plate sunk mounts of rough and extra rough Whatman paper, which we have tested and found quite free from all deleterious matter, and of first-rate quality. These mounts are very striking in appearance, and particularly suitable for exhibition work, and we call attention to them with more pleasure in that an involuntary injustice was done to Messrs. Hannam in our "Annual," as it was stated that one firm only in London produced such mounts of good quality.

MR. THOS. GOULD, of 104, Chestergate, Stockport, is now the Hon. Sec. of the Stockport Photographic Society, *vice* Mr. B. S. Harlow, resigned.

Catalogues.

APPARATUS AND MATERIALS FOR PROCESS WORK.

Percy Lund and Co., of Bradford, and Memorial Hall, Farringdon Street, have just issued a very useful catalogue of apparatus and material for all sorts of process work, which will be found useful to all workers.

C. C. VEVERS, 12, Market Street, Leeds.

This is a list of second-hand photographic and lantern apparatus of all kinds, which contains some very cheap bargains well worth attention.

M. AND T. SCOTT, West Savile Terrace, Edinburgh.

This firm send us a very neat little price list for bromide, platinotype, and carbon enlargements. As regards the quality of their work we can speak in very high terms, as the samples shown at the Convention at Plymouth were first class.

Amateur Photographic Association.—A council meeting to award the prizes was held Tuesday, July 11th, at 58, Pall Mall, the Right Hon. Lord de Ros in the chair. The minutes of the last meeting having been read and confirmed, the following members were elected: Mr. R. Darlington, F.R.G.S., Lady Agnes Dalton Fitzgerald, Mr. Newton W. Emmens, and Mr. James Yale, LL.D. The following resolution was proposed by Mr. Milne, seconded by Mr. Howard, and passed by the Council: "That, in the event of exhibitors sending in their own prints for competition, members be allowed in future to print clouds into their pictures, it being understood that the clouds added are from negatives taken by themselves, and that a communication to this effect be stated on the exhibit." The Secretary, Mr. A. J. Melhuish, stated in reference to the "British Museum of Portraits," that, in accordance with the wish of the authorities at South Kensington Museum, he proposed in future to send, affixed at the back of each portrait, the place and date of birth and such other particulars as each person chooses to send, with their autograph at the foot. This was approved by the meeting; and it was considered that it would greatly enhance the value of the collection. The Secretary then laid before the Council the pictures for the current year, which had been arranged and classified by Mr. Glaisher. Class I. consisted of 160 pictures (the largest number of first-class pictures yet contributed). Class II. comprised 130 pictures; and the remainder were contained in Classes III., IV., and V. The pictures in Class I. were contributed as follows:—C. Stephens, 4; Lord de Ros, 1; R. Murray, 6; F. E. Currey, 1; W. S. Hobson, 4; F. S. Schwabe, 4; Major Board, 4; General Sladen, 2; R. O. Milne, 17; R. Leventhorpe, 11; the Earl of Rosse, 2; J. T. Black, 3; M. de Dechy, 8; Col. Foster, 3; F. G. Smart, 8; Arthur Dresser, 12; H. Emmons, 6; Mrs. Wrigley, 12; E. F. Scougal, 1; E. Kennard, 5; Viscount Maitland, 6; Jerome Harrison, 31; and Lady Agnes Fitzgerald, 1. Besides these some very large bromide enlargements were exhibited by Mr. Milne which were greatly admired. The following prizes were awarded:—First prize to R. O. Milne, a large silver goblet for Nos. 49, 51, and 52; second prize, a silver goblet to R. Leventhorpe for Nos. 235, 237, and 238; third prize to Jerome Harrison, a silver goblet, for Nos. 5, 8, 117, and 123; to Arthur Dresser a silver medal for Nos. 29 and 89; to H. Emmons a silver medal for Nos. 1, 2, and 3; to F. G. Smart a large landscape album for Nos. 54, 53, and 57; to M. de Dechy a portrait album for Nos. 1 and 77; to R. Murray a portrait album for Nos. 292, 298, and 299; to Mrs. Wrigley a medal for Nos. 20, 21, and 23; to Major Board a medal for Nos. 13 and 14; to Lady Agnes Fitzgerald a medal for No. 5; to E. Kennard a medal for No. 6; and to Col. Foster a medal for No. 13. It was proposed by Mr. Glaisher that a special medal be given to Mr. Milne for his magnificent enlargements; this was seconded by Mr. Howard and passed. Mr. Dresser's pictures of the Wild West were specially noticed as being of exceptional interest. A vote of thanks was proposed by Mr. Milne to Mr. Glaisher for the time and care spent by him in arranging and classifying the pictures. This was seconded by the Earl of Rosse and passed.

The Photographic Convention.

(*Continued from page* 46.)

ON THE POWER OF COMPENSATING IN DEVELOPMEN FOR VARIATION IN EXPOSURE.

By W. K. Burton.

THE experiments I am about to describe were certainly suggested by opinions expressed by, or at any rate commonly attributed to, Dr. F. Hurter and Mr. V. C. Driffield some three years or so ago, but I wish to make it amply plain that I do not intend this paper to be taken as a refutation of any opinion that they hold, at the present time, at any rate. In the first place, I admire so much the method of investigation that these gentlemen have pursued that I should be very sorry to write anything that might tend to lower the estimation in which these investigations are held, even if, as may be the case, the conclusions arrived at are not exactly in accordance with fact, and, in the second place, because if there is any refutation to be done there are plenty of people on the spot much more able to undertake it than I am.

As far as I have followed them, Messrs. Hurter and Driffield at first stated that it was impossible, by development, to alter either the density or the opacity ratios in a negative. In other words, that were the thing represented graphically, with light as abscissæ, and one of them having density and the other having opaeity as ordinates, then, the abscissæ remaining constant, the ordinates might be altered by variation in the developer, but that their ratio to each other could not be altered. It is, however, as a matter of fact, very easy to so alter the ratio by variation in development that two curves, representing either density or opacity, would intersect each other, in which case the ordinates would, of course, not be proportionate. I understand, however, that Messrs. Hurter and Driffield have considerably modified their views since their first statement was made, and it may be that I do not here represent fairly even the first position that they took up.

Be all this as it may, it is undoubtedly the fact that, some year or two ago, it was the general impression that it had gone out on high authority—with the sound of trumpets almost—that it was impossible to compensate for variation in exposure at the time of development, and that, with the same exposure, it was impossible to control in any way the result, except in so far as density was concerned.

Now I hope to be able to demonstrate that we have power, by variation in development, to compensate for enormous differences in exposure, and that, with the same exposure, we have *enormous* control over the results.

The experiments that are to be described were begun some two years or so before the time that this paper is likely to be read, but were interrupted by work of one kind and another that seemed more important, the truth being that I felt no great enthusiasm to prove a thing that was a matter of everyday experience.

It was like proving, by the aid of a shokojimeter, that if you got no dinner you were likely to be hungry, if you had enough to eat your appetite would be appeased.

When I got thoroughly into the experiments, however, I found them of the greatest interest, because I began to find that our power of compensation is even greater than I had ever supposed, and I found it possible to work out at least an approximate rule for the variation in development that had to be made for a given variation in exposure.

I wish to state my very strong opinion that experiments on gradations of density (or of opacity) are not of any real value, as throwing light on the probable result of exposure in the camera, unless they include such a range of gradation as is commonly met with in actual camera work. I find this range to be generally, at least in ordinary cases, as several hundreds to one, often as a thousand to one, and sometimes as several thousands to one. What I mean is that the plate has received, at the time of exposure, several hundred, or a thousand, or several thousand times as much light at one point as it has at another.

In this connection it is to be noted that the range of light reflected by the object photographed is always greater than the range of light that reaches the plate; that it is often much greater. Thus it is practieally possible to have the nearest possible approach to absolute black in the object photographed, otherwise an approach to zero of light, in which case the range approaches infinity. In the case of the light actually reaching the plate this cannot be the case on account of the unavoidable diffused light in the camera.

For the preliminary experiments a sensitometer on the principle of that of Messrs. Mucklow and Spurge was made. The areas of the apertures varied in the ratio of 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, and 2048. The holes were bored by a watchmaker, the largest being 1 in. in diameter, and, as far as I can make out, the diameters are very nearly what they ought to be. The instrument is a convenient one, using quarter-plates, and many experiments were made with it. It was, however, considered that these could not be taken as conclusive, because plates could be exposed only in succession, and no standard light was available. Moreover, it was found that a gradation varying from 1 to 2048 was not sufficient fo a thorough investigation of the subject.

It was, therefore, decided to construct a sensitometer in which plates could be directly exposed to light, each half having the same exposure. The plates were then to be cut in two, and the two halves were to be developed in any two developers, the effects of which i was desirable to compare.

This sensitometer is shown in the two photographs I. and II. It is of very simple construction. Photograph II. shows a back view of the sensitometer. It has a door, A, which is shown open. Through this door a plate 12 by $2\frac{1}{2}$ (one quarter of a 12 by 10 plate), B, can be introduced. The plate is held in a brass frame or carrier D, that can be raised or lowered by the bar E, having a toothed or serrated edge. This bar is pressed by a spring in the direction of these teeth, so that it will remain at any of fourteen different heights, holding, of course, the plate with it. The spring F presses the film side of the plate very nearly into contact with the front of the sensitometer. In fig. I. will be seen a slit G, 2 in. in length and a $\frac{1}{4}$ in. wide. This slit is covered by the flap H, unless the same is held open by hand, as seen in the photograph. The apparatus is designed to give exposures to different transverse strips of the plate of the size of the slit G in the ratios of 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, and 8192. Many of the results of experiments will show that this range is not at all too long for investigating the effects of different developers on the two halves of the same plate, though the range is far greater than can be registered correctly; with any plate so exposed and developed, the strip having the shortest exposure is visible.

It was found by experiment that the shortest exposure that could be given with the flap varied very little and was nearly exactly one-quarter second. A half-second could be guessed with some approach to correctness, one second with more, and two seconds could be measured roughly with a stop watch, four seconds with but a small percentage of error—all this after some practice, of course. It was, therefore, decided to make the exposures begin with a quarter-second, and work up doubling. It needs, however, only a very little arithmetic to discover that, even beginning at this short length of time, the last exposure must be considerably over half-an-hour, and to make hundreds of exposures of plates, in which the last item alone came to more than half-an-hour, was not to be thought of. For this reason the first exposures were all made a quarter-second each, but the distance of the plate at the time of the first exposure, 10 ft., was made 7 ft. for the second, 5 ft. for the third, 3 ft. 6 in. for the fourth, 2 ft. 6 in. for the fifth, and 1 ft. 9 in. for the sixth, and all others. These distances vary very nearly as 1, $\sqrt{\frac{1}{2}}$, $\sqrt{\frac{1}{4}}$, $\sqrt{\frac{1}{8}}$, $\sqrt{\frac{1}{16}}$, and $\sqrt{\frac{1}{32}}$. That is to say, the quantity of light was doubled at each approach of the sensitometer to the source of illumination, all the exposures at 1 ft. 9 in. from the light needed only $\frac{1}{32}$ of the time they would have needed at 10 ft., and the longest exposure was reduced to 64 seconds.

It is not pretended that the successions were really accurately those mentioned above, and it is of no consequence that they should be. Whatever irregularity there might be was bound to affect one half of the plate exactly as the other, and, as the after process consisted in cutting the plates in half longitudinally, and developing the two halves in different developers, the only thing essential is that the two halves of the plate should have exactly the same exposures.

Nevertheless I venture to state that the exposures of all those strips that were exposed at different distances gave very nearly the ratios mentioned, as the rapidest possible opening of the flap was found to remain very uniform, and a dead black screen was placed behind the light, to prevent reflection, which would considerably modify the law of the quantity of light varying inversely as the square of the distance, at any rate considering our light as the centre of illumination. The exposures $\frac{1}{2}$ and 1 second are, of course, the most uncertain. From two seconds on, it may be considered that the acceleration is that stated, within very narrow limits of error. In no case did the light vary more than about 10 per cent. during the making of one set of exposures. The results of one set of exposures might thus be roughly compared with each other, even comparing different slips, but the necessity for this has been avoided by always developing together, in a developer that will be stated, one half of each slip, so that any difference in exposure can be detected.

I have signed my name across each slip, before it was cut in two, that there should be no mixing up, and lest any should doubt the genuineness of the results. These plates would form a confirmation, were any needed, of the recent statement by an expert in handwriting, that no one can sign his name exactly the same twice, and

that if two supposititious signatures, that exactly superpose each other, are discovered, it may be concluded that one is a forgery!

To return to the plates, however, as the vendors of various sauces and other goods remark, "Without this signature none is genuine."

As a light an oil lamp was used. I have found a common oil lamp, with burner in good condition, well trimmed, with a fairly large reservoir, and with a good quality of mineral oil, to be much more constant for several hours than any candle that I have been able to find, if it is first allowed to burn till all parts that heat have become hot. Of course it is not so good for making comparisons on different days, because the light of a lamp is very liable to vary from day to day. I wish, however, here to remind you again that the results of my experiments are in no way dependent on either the intensity or the uniformity of the light.

It was found that, using a well-known brand of commercial plate, sold as "ordinary," a small lamp of five to six candle-power was just capable of giving a developable image with an exposure of one quarter of a second at a distance of 10 ft.

I have certainly at times worked exceptionally rapid plates that needed only one-fifth to a sixth of the exposures of these. We may, therefore, deduce the fact—by no means bearing on these experiments, but of some interest—that the most sensitive plates made will be visibly affected by an exposure of a mere fraction of a second at 10 ft. from a candle.

The greater number of the exposures were made with such a lamp as this, but in some cases, where it was considered advisable that the first figure in the sensitometer, in the sense of the first exposed, should develop out quite markedly, the exposure was made to a lamp with a burner giving a nearly spherical flame (called, I think, a "rose burner") having a power of some 20 to 25 candles.

Where numbers of strips exposed are stated, it is to be understood that No. 1 is the strip that was first exposed, and that had the shortest exposure. The "first four strips," or Nos. 1, 2, 3, and 4, means, for example, these strips that received each quarter-second exposure at distances of 10 ft., 7 ft., 5 ft., and 3 ft. 6 in. from the lamp.

I wish to state here that nearly all development was done by my assistant, Mr. K. Arito, from written exposures given to him by me without comment. I had distinct reasons for this. In the first place, Mr. Arito is a very careful operator, much more careful than I am—though that may not be saying much. In the second place, although of course he knew the general drift of the experiments, he knew nothing of what had given rise to them, or of the exact lines that I was working on. He was, therefore, much less liable to be carried into the inaccuracies that I distinctly state most of us are liable to be carried into unconsciously, or nearly so, when we wish experimentally to prove a particular fact. Still farther, it enabled me to make sure that the experiments could be repeated by any intelligent operator from briefly written descriptions.

Wherever "normal pyro and soda" developer is referred to, it is to be taken as referring to the developer that the writer has most commonly used for several years past, that is to say, one compounded as follows:—

To each oz. of developer—

Pyro (either dry or freshly mixed, without preservative)	2 gr.
Sodium carbonate (crystalline)	12 „
Sulphite of soda	12 „

This generally works without fogging, but sometimes, not always. When a new batch of plates is bought a sample is tried, and the quantity of bromide needed to prevent any hurtful amount of fog is determined. This never exceeds half-a-grain to the ounce of bromide of potassium with any plate that would generally be pronounced workable. In all these experiments a quarter of a grain of bromide of potassium was used to each ounce of "standard pyro and soda developer."

I do not wish to re-open the old discussion as to ammonia against other alkalies for development with pyro, but shall merely say that I have, for some time, considered that it was possible to get more out of a short exposure with soda, considering not detail only, but the whole of the negative, than with ammonia, and that the present experiments confirm this; that, moreover, I thought till recently that there was greater latitude of exposure with soda than with ammonia, but that these experiments have made me change my mind in this respect, as I have been able to get greater latitude with ammonia than with any other alkali that I have tried.

Here it may be mentioned that a set of experiments incidental to the main experiments was made to discover the relative quantities of bromide of potassium and of bromide of ammonia that were necessary to have the same retarding effect. It was found that, for unit quantity of bromide of ammonium, it was necessary to use that quantity multiplied by between $1\frac{3}{4}$ and 2 of bromide of potassium. Probably, the exact multiplier lies very nearly halfway between these two—perhaps 1·875. It is near enough for all practical purposes to state that it takes nearly twice as much bromide of potassium to do the same restraining work as any given quantity of bromide of ammonium. It will be seen that the difference is much greater than the different weights of actual bromine contained in the same weights of bromide of ammonium and bromide of potassium.

After a somewhat random set of experiments, conducted to decide on the best lines to work on, more systematic experiments were undertaken. I here give the results of the most interesting of these, not by any means necessarily in the order in which they were carried out.

In all cases the temperature of the developer was kept at as nearly 65 deg. Fahr.

A.

The instructions were:—

"All plates to be developed with a developer containing 2 gr. pyro, 12 gr. carbonate of soda, and 12 gr. sulphite of soda."

"One half of each plate, to be marked 'A,' to be developed without bromide, till the last figure is distinctly visible, till there is fair density, but development to be stopped before there is distinct fog."

"No. 1. Develop the B half with a developer containing one half-grain of bromide of ammonium per ounce, but stop when strip 2 only is of the same density as strip 1 in the A half"

"No. 3. One grain of bromide of ammonium to the ounce, stop development when No. 4 only is of the same density as No. 1 in the B half."

"No. 6. Eight grains of bromide of ammonium to the ounce, stop development when No. 7 only is of the same density as No. 1 in the A half."

There were intermediate Nos. and also Nos. up to and including No. 8. I select, hower, and send you the results of these three only, as being typical.

These were exposed to the large lamp, and the results must be taken as illustrating those of over-exposure. In the case of all other results sent, exposures were to the small lamp.

It will be seen that, in the case of No. 1, the density of the first few strips is, to all intents and purposes, the same in A and B, but that the density rises, after a little, more rapidly in B than in A. Farther than this the opacity reaches a maximum at about the 9th or 10th strip in the case of the half A, whereas it keeps increasing till nearly the end of strip B. At the end the opacity of B is much greater than that of A at any part.

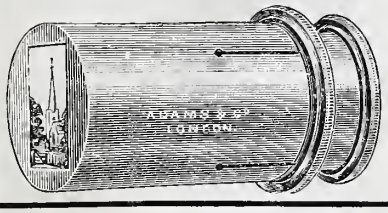
It will be seen that the compensation for over-exposure here has been considerable, and that the curves, both of density and opacity, cross each other, so that the density ratios are changed.

In No. 3 the same thing is to be remarked, and besides that, the first strip or two of B are less opaque than the corresponding strips of A. Here there is greater compensation for over-exposure, and the curves of both density and of opacity cross each other, so that the density ratios are changed.

In No. 6 the same thing is to be noticed, with the complete suppression of the first four, and nearly the complete suppression of the next two strips of the B side. It must, however, be explained here that intensification was resorted to. The reason for this was that, with the large quantity of bromide here mentioned, corresponding, say, to 15 gr. of bromide of potassium to the ounce, the image was white by transmitted light. I mean the deposit. It had no printing value at all, and I had not time to discover even if it was of silver. At any rate it blackened, or rather browned, under intensification. It will be seen here that, at any rate, the curves of opacity cross, and that the opacity ratios are very much changed. This is, however, by the use of an intensifier. The next plate, with double the quantity of bromide in the developer, showed the same peculiarities even more strongly than the last, and it was found impossible even to "brown" the image.

A great number of experiments here intervened, having for their object the investigation of the effects of varying the quantity of pyro as well as that of the restraining bromide, and also to discover to what extent compensation for variation in development can be carried by combined variation in the developer with the after application in the intensifiers. The results of all these experiments being summed up in those got with ammonia as an alkali (the experiments just referred to were all carried on with carbonate of soda), I, therefore, prefer to leave them out, as the recounting of them would be tedious, the more especially as I found the results, in the matter of compensation for variation in exposure, much better in the case of ammonia than with soda, in great measure on account of the whiteness of the deposit with soda, when much bromide was used, that has been already mentioned.

A set of experiments was now made to compare what I have called the "normal pyro and soda developer," in its results, with those of pyro and various proportions of bromide and ammonia. As I have said, I came to the conclusion that, vary the ammonia developer as I would, I could not get out as much with it as with soda without fog, and it is to be observed that the advent of fog is



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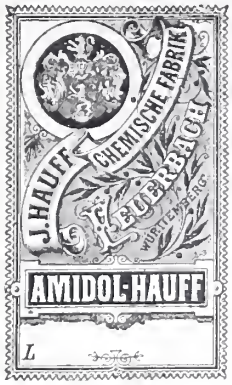
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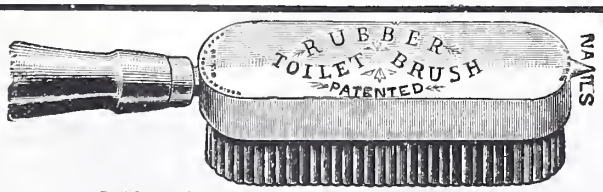
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B.

This series of experiments is intended to show the power of varying the effects of a uniform exposure, in a manner that would correspond to compensating for variations in exposure, with the ammonia developer, varying the quantities of each of the three constituents, and intensifying in certain cases. I think these experiments are conclusive as to the enormous control that we have over our results by variation in development.

The instructions were :—

"Develop all halves A with a developer containing ½ grain pyro, ½ grain bromide of ammonium, 2½ minims of ammonia to each ounce. Develop either till slight fog shows itself, or till all action has, for some time, ceased."

"Develop all halves B with a developer containing 4 grains pyro, 4 grains bromide of ammonium, and 4 minims of ammonia to each ounce."

(It is to be observed that these quantities had been determined on from the results of previous experiments.)

"No. 168B, restrain one figure (*i.e.*, stop development when the density of No. 2B is the same as that of No. 1A)."

"No. 169B, restrain two figures (*i.e.*, stop development when the density of *No. 3B* is the same as No. 1A)."

"Nos. 170, 171 and 172B, restrain three figures."

"Nos. 173, 174 and 175B, restrain four figures."

"Nos. 176, 177 and 178B, restrain five figures."

"Nos. 179, 180 and 181B, restrain six figures."

"Nos. 182, 183 and 184B, restrain seven figures."

"Intensify Nos. 171, 174, 177, 180 and 183 with bichloride of mercury followed with ammonia."

"Intensify Nos. 172, 175, 178, 181 and 184 with bichloride of mercury, followed by sulphite of soda."

Prints from the whole of this series are sent. It should be remarked that, in making all prints from these long sensitometer exposed plates, the effect of fog is, so far as possible, eliminated where it is present, by shading the unfogged half of the plate during development, so that the most transparent part of each half is, as nearly as possible, represented by the same tint.

It will be seen that, except in the case of No. 182, the curves of opacity more or less distinctly cross. The meaning of this, in the particular case referred to, is that, whereas the first strips of the A halves show greater opacity (and consequently print lighter) than the corresponding strips of the B halves, the last strips of the A halves show less opacity (and consequently print darker) than the corresponding strips of the B halves. In many cases the first strips of the B halves are not visible at all, whilst they are even printable in the A halves, nevertheless the opacity of the last strips of the A halves is greater than that of the B halves.

It will be evident that, even in the case of No. 182, the curves of opacity would cross were the gradation of light longer. On account, however, of the fact that seven strips have been restrained in the case of B, the gradation of light capable of giving a developable result is only 1 to 128 in B, as compared with 1 to 8192 in the case of A.

Certain irregularities will be readily noticeable in these results. They arise from the difficulty in following exactly such instructions as "restrain 4, 5 or 6 strips." On this account the whole system of compensation in development, for variation of exposure and of varying the results with constant exposure, may be condemned by some. I shall only remind those who incline to do so that it is always a difficult matter in photography for even the most skilled to get the exact result they wish.

I considered that the last set of experiments described indicated powers to compensate, in development, for exposures varying as one to considerably more than 100 without resort to intensification, as one to several hundreds having resort to intensification, hence experiments to be described presently.

C.

These experiments were undertaken as introductory to a set of experiments with the ferrous oxalate developer. The instructions were as follows :—

"Prepare a saturated solution of oxalate of potash, and another of ferrous sulphate (each at a temperature of 65 degs. F.), and make each acid enough, with sulphuric acid, to turn litmus paper quickly red."

"Develop all A halves with normal pyro and soda developer."

"Plate No. 17B, develop with one part iron solution to three parts oxalate solution."

"Plate No. 18, one part iron solution to four of oxalate."

"Plate No. 19, one part iron solution to six parts oxalate."

"Plate No. 20, one part iron solution to ten parts oxalate."

"All plates, both A and B, to be developed either till slight fog appears, or till all action seems to have ceased for some time.

One result of these experiments is to show the very slight difference in the action of this developer, by variation in the ingredients, except in so far as time of development is concerned. As the developer becomes more diluted, the opacity throughout is slightly increased, but this is really because the fog point came comparatively earlier with the concentrated than with the dilute developers, and in each case development with oxalate had to be stopped because the fog point was reached.

Another thing it shows most strikingly is the inferiority of ferrous oxalate, at any rate without the addition of bromide, in the rendering of gradation. A print from plate No. 18 is sent to illustrate this. It will be seen that, in the half B, the greatest opacity is reached at about the eighth strip, after which reversal takes place, whereas, in the case of the half A (pyro developed) opacity increases nearly to the end of the line. Here both the opacity and density curves cross, and the density ratios are not the same.

D.

"Develop all halves A with 'normal pyro and soda developer.'"

"All oxalate developers to be made up of one part of the iron solution, already mentioned, to four parts of oxalate of potash solution."

"No. 87B to be developed with the above normal ferrous oxalate solution, without bromide, till slight fog appears, or till all action appears to have ceased for some time."

"No. 88 B to be developed with ferrous oxalate developer having one grain of bromide of potassium per ounce."

"No. 89B to be developed with ferrous oxalate developer having two grains of bromide of potassium per ounce."

"No. 90B to be developed with ferrous oxalate developer having four grains of bromide of potassium per ounce."

"No. 91B to be developed with ferrous oxalate developer having eight grains of bromide of potassium per ounce."

"No. 88B to have one strip restrained."

"No. 89B to have two strips restrained."

"No. 90B to have three strips restrained."

"No. 91B to have four strips restrained."

Prints are sent of the results of all these exposures. It will be seen that, by stopping development before it is complete, in cases where bromide has been added, we have the power of compensating for variation in developing, or of varying the results of constant development, as in the case of the pyrogallol developer, though I am not prepared to say that the curves of either opacity or density actually cross in the cases under consideration.

E.

So far all experiments described have had for their object the alteration of the results with fixed exposure. The next experiments were intended to investigate to what extent it was possible to get identical results with varying exposures. It was decided to rely on exposure in the camera for this, although some preliminary experiments were made with the sensitometer, using the long plates of glass.

It was soon found possible to produce, with exposures varying as much as 10 to 1, or even 20 to 1, negatives so nearly identical that they were both pronounced, by experienced photographers, good negatives, neither over nor under exposed, and that, moreover, were of such a nature that these photographers would not undertake to state which of the two negatives had had the longer exposure.

This was not enough, however. The experiments already described indicated the possibility of compensating for a variation of at least 1 to 100, and an attempt was made to systematically investigate the variation in the developer that was necessary to compensate for a given variation in exposure.

In the first place exposures were made on a well-lighted landscape, varying in the ratios of 1, 2, 4, 8, 16, 32, 64, and 128, and attempts were made to discover the variation in the constituents of the developer that would give similar results with all these exposures.

For various reasons it was decided to keep the quantity of alkali —for reasons already stated ammonia was preferred—constant, whilst the quantities of pyro and of bromide were varied.

The first thing to do was to find the best relative quantities of pyro, ammonia, and bromide for the production of a normal negative by a normal exposure. A normal negative I can only define as the kind of negative that an experienced photographer wishes to get. This, I consider, must remain a matter of opinion or even of taste. A negative with opacities directly proportional to the light reflected by the different parts of the subject would be a perfect negative (apart from the rendering of colour values) if all printing processes were such that different parts of prints made by them re-

flected quantities of light proportionate to the opacity of the negative. This is not, so far as I know, the case for any printing process through any great range, and is far from being so in the case of many of them.

There is still farther objection to the above definition of a perfect negative, namely, that no plate that is made has the power of producing such a negative with ranges of light nearly as great as are common in landscape work. We must of necessity make up our minds to sacrifice something either of the shadows or of the high lights, and it is purely a matter of taste which we prefer to sacrifice. A close examination of the photographic pictures recently sent from the Camera Club to Japan, for exhibition at the latter place, and representative of the most artistic work done in the Occident, seems to show me that workers of the most advanced school tend to turn out work that would have been spoken of as "under-exposed" some few years ago. That is to say, they see fit to abandon that so-called 'golden rule"—in any way supremely idiotic—"take care of the shadows, and let the high-lights take care of themselves," and often, at least, prefer to sacrifice something in the shadows for the sake of the high-lights.

Normal exposure I shall define as the shortest exposure that will give the negative what the photographer wants to get. Normal developer might perhaps be defined as the best developer for producing this normal negative with normal exposure; but it looks rather like giving definitions in a circle.

Let me state here, parenthetically, that the prints you are to see just now are not by any means from negatives of the kind I like to get. The negatives are altogether too hard. This was because I assumed that the developer that was "normal" for certain quarter-plates that I had been using would also be normal for 12 by 10 plates of the same brand, but a different number. This was not so, however. Of course, I ought to have repeated the experiments, but I had already exposed a gross of 12 by 10 plates, besides innumerable quarter-plates, and time was getting short for putting my material in form, so I let the negatives slide as illustrating my point quite well enough.

To return, however, to the plates exposed in the ratios mentioned above, the ammonia was kept constant, and various multipliers of bromide and ammonia were tried for each doubling of the exposure.

My first impression was that the bromide ought to be increased in a rapider ratio than the pyro, but this seemed to be a mistake. It appeared that better results—that is to say more uniform—were to be got by increasing the pyro and the bromide in the same ratios.

At first I tried using half as much again more pyro and bromide for each doubling of the exposure. That is to say, multiplying the quantity of pyro and of bromide each by $\frac{3}{2}$ for each doubling of the exposure. It was found that, with this increase of the quantities of chemicals mentioned, the contrast increased greatly with the increased exposure, and the negatives from those that had had the longest exposures appeared actually under-exposed as compared with those that had had the shorter exposures.

Next was tried using one-third as much again more pyro and bromide for each doubling of the exposure; that is to say, multiplying by $\frac{4}{3}$. The result was the same as in the last case, but to a less marked degree. This entirely knocked on the head a theory I had formed that the proper multiplier was probably $\sqrt{2}$

Next was tried using one-fourth again more pyro and bromide for each doubling of the exposure; that is to say, multiplying $\frac{5}{4}$. It was found that this multiplier was somewhat too small. That is to say, the negatives that had had the longest exposures were thinner than those that had had the shorter. The falling off in density was not, however, perceptible through the first five negatives.

It is evident that the proper multipliers, if a constant multiplier is what is correct, and it is evident that such is very nearly being the case, must lie somewhere between $\frac{4}{3}$ and $\frac{5}{4}$, or $1\frac{1}{3}$ and $1\frac{1}{4}$. Between, that is, 1·2 and 1·25. Let us say it is 1·3. the thing might be put in the form of an equation as follows:—

Let C = quantity of pyro (or of bromide) used for right exposure.

Then, if exposure = 1 ... Pyro = C
" " = 2 ... " = C × 1·23
" " = 4 ... " = C × $(1{\cdot}23)^2$
" " = 8 ... " = C × $(1{\cdot}23)^3$
" " = 16 ... " = C × $(1{\cdot}23)^4$
" " = 32 ... " = C × $(1{\cdot}23)^5$
" " = E ... " = C × $(1{\cdot}23)^n$
∴ When 2 = E

$$\text{Therefore, } n = \frac{\log. E}{\log. 2}$$

$$\therefore \text{ Pyro} = C\,(1{\cdot}23)^{\frac{\log. E}{\log. 2}}$$

$$\text{Then since } (1{\cdot}23)^{\frac{1}{\log. 2}} = 2$$

$$\text{Finally, pyro} = C \times (2)^{\frac{1}{\log. E}}$$

From which equation a curve or a table might be made for practical use.

This law is at least approximately true for several brands of plates, for sundry initial variations of developers, at least within limits of the normal exposure, and this multiplied by 100 or so.

Your attention is now asked for a set of prints from negatives that have had exposures varying as 1, 2, 4, 8, 16, 32, 64, and 128, the same brand of plate being used, and the exposures being made about midday—as a matter of fact from a little before till a little after, as quickly one after another as was possible, the weather brilliantly clear.

I should like to know if anyone seeing these prints will undertake to place them in the order of their exposures? I cannot myself. I cannot, in their present form, even tell which is the first and which is the last. They are, however, cut from 12 by 10 prints, and it was pointed out to me by a very "cute" friend—he is from the United States of America—that it was possible, in the original conditions of the prints, to tell the two that had had the longest exposures on account of the effect of the motion of the overhanging branches of a tree that gave a little beauty to the otherwise very uninteresting little bit of landscape—uninteresting unless it may interest some old friend to know that the vehicle in the foreground (put there to get a bit of really dark shadow, to help the judgment in development) is that in which his humble servant is ignominiously trundled about the streets of Tokyo by a blue-coated, bare-legged coolie!

I cannot tell the first six negatives one from the other by inspection, but the last two I can tell from the others, and from each other, on account not only of the yellowness of the image, but on account also of a yellow deposit (I do not know what else to call it) in the shadows, or rather all over the plate, including those parts of the plate protected by the rebate of the printing frames. This discolouration is one of the only two reasons that I know of why compensation for variation in exposure should not be definite. It makes the time taken for printing very long. I have, in experiments with quarter-plates, got results without this stain and objectionable colour of image, with exposures varying more than those mentioned, and thought at one time that I had got to the bottom of the matter. I find, however, that I have not. Its appearance is uncertain. Perhaps it is due to impurity in some one or more of my chemicals acting for a long time. I somewhat suspect the sulphite I am using.

Another reason why compensation must be limited in practice is the outrageous length of time that development takes when the exposure is much above normal, and is compensated for by variation in the developer. The plate of the eight, from which the prints that are shown were made, that took the longest exposure, took two hours to develop.

It may be urged that the prints are not identical; it is quite true that they are not. I only point out that there is no uniform variation, and remind you how very difficult it is to make even two really identical negatives (assuming that the conditions are such that it is possible), if only one factor varies, say, the rapidity of the plate. I should like to see anyone make eight identical negatives on eight plates, varying in sensitiveness as 1 to 128 at the first attempt, and it must be borne in mind that this was the first experiment made after I had concluded that the formula given above represented approximately the variation in developer necessary, that the brand of plate used was somewhat different from any we had been using before, and that the only instructions Mr. Arito had were, "Use these developers for the different plates, and make eight negatives as like each other as you can." I am sure it would have been possible, by several trials, to get negatives practically identical.*

As to the actual developers used, I must confess that to avoid the trouble of multiplying the quantity of pyro and of bromide by a most awkward fraction, 1·23, which I had not then arrived at, for each increment in exposure, or of integrating from the initial quantities, by the use of a table of logarithms, I multiplied in the first three cases by $\frac{4}{3}$, in the last four by $\frac{5}{4}$, the result being not much different from what would be got working by the actual formula.

The nearest $\frac{1}{4}$ grain and, towards the end, the nearest $\frac{1}{2}$ grain was taken in every case.

* The print marked "9" on the back was from a negative that had an exposure the same as the longest of those mentioned, and that was developed with the first of the developers given. It was removed from the developing dish as soon as marked fog set in. Another plate was exposed for the same length of time, and was developed in the same developer, but was given the same time in the solution that had been necessary for the plate that had an exposure of $1\frac{1}{2}$ sec., namely, five minutes. The result is almost complete blankness, but with some reversal. If there were a week to spare, and certainty of sunshine all day long on every day, I should make a print from this negative too.

The following were the actual developers used :—

Per ounce of developer.	Pyro	Bromide	Ammonia, 2 minims.
1	3 gr.	Bromide of ammonium, ¾ gr.	
2	4 gr.	Bromide ammonium, 1 gr.	
4	5 gr.	Bromide ammonium, 1¼ gr.	
8	6 gr.	Bromide ammonium, 1½ gr.	
16	8 gr.	Bromide ammonium, 2 gr.	
32	11 gr.	Bromide ammonium, 2½ gr.	
64	14 gr.	Bromide ammonium, 3½ gr.	
128	19 gr.	Bromide ammonium, 5 gr.	

The sulphite used was only five grains per ounce in the first six cases, ten in the last two. The reason the quantity was kept so low was that, with the long times of development necessary in the case of the longest exposures, the plates were found to partly fix out before development was over if the sulphite were kept at four or five times the quantity of the pyro. I do not yet know whether this was due to impurity of the sulphite or not.

The exposures actually given were as follows :—

Min.	Sec.
	1½
	3
	6
	12
	24
	48
1	36
3	12

They were made by myself, by the aid of a stop watch, with such care as I am capable of. There may be an error of a fifth, or even, perhaps, a quarter of a second, in any one of them, but I think not of more. It is true that this amounts to a considerable percentage in the case of the shorter exposures, but the error is as likely to be in one direction as in the other, and, in any case, it leaves the range of exposures as one to fully a hundred.

In a sealed envelope, which I hope will not be opened till any who have had patience enough to listen to this paper as far as this point have tried to put the prints in their proper order, are given numbers corresponding to letters on the backs of the prints. It is to be understood that No. 1 corresponds with the shortest exposure, and so on.

Conclusion.

I hope I have proved by these experiments that we have power both to vary in development the results of uniform exposures, and to compensate for differences of exposure. I should not have thought it right to trouble you with so long a paper on the matter, but that the possible variations and the possible compensations have proved so much greater than I imagined them to be, and so much greater than they are, I think, commonly supposed to be.

It will be seen that throughout these results, in so far as they constitute change in ratio of gradation, are brought about only by stopping development at certain stages before it has gone as far as it would go. I doubt if it is possible to change gradation of density or of opacity at all, if development be carried as far as it will go. At any rate, the change that can be effected is but slight. This is leaving out of the question the reaching of, or approaching to, a maximum possible density.

When some twelve or thirteen years ago I stated that "bromides restrain both the increase of density and the increase of detail, but the former to a less degree than the latter," I believe I stated, in somewhat crude language, the reason why it is that bromides in the developer give us the power both of varying our results with constant exposures, or of compensating for varying exposures.

Before that time, if I remember rightly, I had found, to my own surprise, that it was possible, if only time were given, to bring out the same figure on plates exposed under the Warnerke sensitometer, however great the quantity of the bromide added to the developer, within pretty wide limits. The results of these experiments were communicated to the *British Journal of Photography* in one, or I think more than one, article that I have not access to here, and were, I remember, discussed at the rooms of the Society of Arts, probably before the South London Photographic Society.

After that a more elaborate set of experiments was made, investigating the results of varying each of the three ingredients of the alkaline developer, the results being communicated again to the *British Journal of Photography*, and the actual plates being handed to the Camera Club, after that institution had been founded.

The results of these experiments are referred to by Mr. H. J. Channon, in a very interesting paper in the *International Annual* for 1891, page 255. I also received much information from this gentleman, and various papers, all of which courtesy has, I fear, passed unacknowledged, for which omission I crave forgiveness.

I have given the results of only a fraction of the experiments that I intended to describe. These include the comparisons of the effects of hydroquinone, eikonogen, rodinal, amidol, and "christalos," using various alkalies, or, in some cases, none, with what I have called the "standard pyro and soda developer;" but this paper has grown to such an unconscionable length that I must leave the results of these experiments to some other communication, or to limbo.

I wished to say something about Messrs. Hurter and Driffield's method of determining the sensitiveness of plates, but shall merely now say that it seems to me by far the nearest approach that has yet been made to a perfect means of determining the sensitiveness of plates, taking into account, as it does, the useful densities, instead of the faintest detail, as heretofore—yet not perfect. The reason why I consider it not perfect will be understood from the objection that I have to any definition of a perfect negative that has yet been given, other than that negative that appears perfect to the man who makes it, the assumption being that he is a man of skill, and of something more, and knows what he wants eventually to produce, to wit, a picture.

I wish, finally, to express my gratitude to my colleague, Mr. C. D. West, M.A., Mr. K. Arito, and Mr. O. Kondo, for their invaluable assistance in all the experiments described.

P.S.—Just a word about the re-reversal that we read of as arising from very prolonged exposures. I have tried to get this often enough without success, and determined to make a supreme effort this time. The long sensitometer was used, and plates were exposed to the full blaze of sunshine for times from ¼ sec. to 34 min. 8 sec. There was not a trace of re-reversal, developing either with pyro or with ferrous oxalate. This corresponds to an exposure in the camera, to a brilliantly lighted landscape for many days, with the conditions as they commonly are! I think that, if it is possible to prove a negative, these experiments prove the non-existenee of re-reversal in the case of gelatine dry plates. I should like to know of any one who has had actual experience of re-reversal in the case of gelatine dry plates, or of any other plates for the matter of that.

REMARKS UPON PROFESSOR BURTON'S PAPER.

By Mr. H. M. Elder.

A great many of Professor Burton's earlier remarks seem to be due to the unfortunate confusion caused by the special meaning given to the word "density" by Messrs. Hurter and Driffield. His opinion as to the range of gradation commonly met with in camera work differs very largely from that of Capt. Abney, who, at a meeting lately held at the Camera Club, said that as a rule this range did not much exceed intensities of light in the ratio of about thirty-three to one. In the example quoted at the time, it was asked what was the ratio of the light reflected by the white and black in the case of a figure draped in black velvet with a white shawl.

Passing on, however, to the main object of his paper, Professor Burton has abundantly proved in a qualitative manner that the ratio of gradation in a negative is dependent on the time and method of development, and his numerical formulæ for the strength of pyro developer to compensate for increased exposure is a very interesting one. It seems, however, that a mere qualitative proof of this fact is not of very great importance, except in so far that it will tend to reassure those photographic weaklings who have been frightened by Messrs. H. and D.'s much misunderstood paper into disbelieving the evidence of their own experience. What would seem now to be wanted is a complete quantitative investigation of the whole problem. It is, of course, a long and laborious task, but it may be lightened by working systematically at it. I would point out that from Professor Burton's paper it is almost impossible to really repeat his experiments, since certain important factors are left almost unnoticed. The prints themselves, as the author has pointed out, show many irregularities, and this was inevitable from the method of work. It is easy to see that in the feeble light of the developing room it is a sheer impossibility to carry out such instructions as were given to Prof. Burton's assistant with any certainty, and I think that it speaks very highly for Mr. Arito's care and ability that the irregularities are not more marked than they are. Then, again, it is impossible to draw any very definite conclusions from mere inspections of negatives and prints. It is an absolute necessity, in carrying out such work as this, to make actual measurements of the transparencies of the resulting negatives. No doubt, if Prof. Burton had done this the irregularities would have been more marked than they are, for it has been pointed out again and again by Capt. Abney and others that the eye is

utterly untrustworthy as a measuring instrument by which to judge the density of a deposit on a photographic plate. If there is any truth in a formula which I put forward at the Camera Club Conference of the present year, to represent the action of light and development on a photographic plate, it ought to be capable of accounting for such results as those of Prof. Burton's. And if any one will take the trouble to examine the effect of varying the two constants that depend on development in this formula, I think it will be easily seen that it will account in a large measure, and I believe, myself, entirely, for these results, and that even the complete formula of Messrs. H. and D. fails to do so. Prof. Burton's paper is an interesting and very valuable one, and would have been far more so if he had not trusted so much to human judgment, both in making his experiments and in interpreting the results. By this, I mean that what is wanted is a series, and a long one, of definite experiments on plates definitely exposed, developed in developers of known constitution for known times (not until a certain appearance most difficult to seize is shown), and then measured carefully, so that the results can all be numerically expressed.

Telephotographic Systems of Moderate Amplification.

By T. R. DALLMEYER, F.R.A.S.

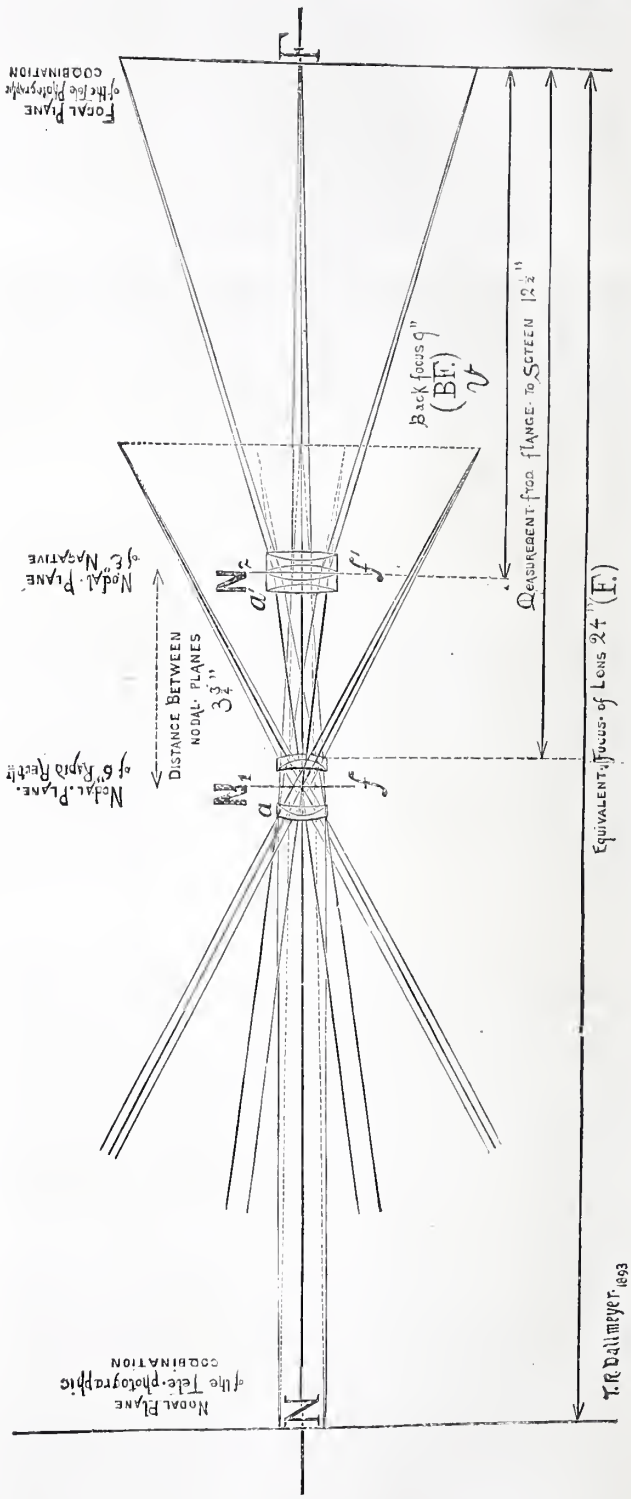
If the positive element of a telephotographic system have a large angular aperture, or a high intensity, say *f*/3 or *f*/4, it is possible to produce a combination of considerable magnification (in a short compass), maintaining at the same time sufficient rapidity for all ordinary purposes. With such a positive element, however, it becomes necessary to introduce a means of correction for spherical aberration when the compound system is used for any but one extension of camera, and one particular distance of object. The advantages of this type of lens have already been described, as also the manner in which the necessary corrections referred to have been carried out.

Now, if the positive element have only a moderate intensity, say, *f*/8 or less, and the magnification required be not great—in other words if the focus of the negative element combined with it to form the telephotographic system is not too small a fractional part of the focus of the positive element—the compactness of the telephotographic system is maintained, and further, the amount of spherical aberration introduced for planes other than that for which it is constructed, becomes a negligible quantity. Again, with a comparatively weak negative, the latter can be made of considerable diameter, so that there is the compensating advantage of a greater angle than it is possible to include as against the loss of magnification.

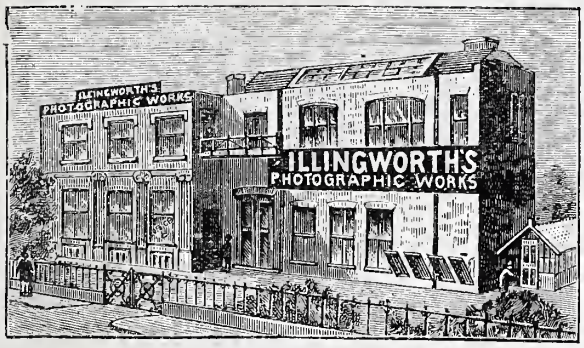
I was at first inclined to think that a special construction involving comparatively weak magnification in ordinary lenses of the rapid rectilinear type was unnecessary, as most cameras, for a given size of plate, will permit of sufficient extension to utilise one combination only of the doublet designed to cover that plate, and so obtain an image of double the linear dimensions. Further consideration, however, has led me to think that there are advantages of sufficient weight to merit a special construction. The chief disadvantage of using one-half of a doublet is that it requires stopping down in order to cover the plate properly, and again there are, of course, only the two definite focal lengths possible with the one lens, *i.e.*, both combinations or one alone.

By the use of a negative attachment to the doublet lens, the full aperture can be maintained, and a wide range of foci can be obtained by the employment of one negative lens only, in conjunction with it, controlled only by the separation of the nodal planes of the two elements (but in practice by the camera extension). Moreover, the one positive lens, used in conjunction with a battery of several negative lenses each of different foci, can be made to give any focus one chooses longer than that of the positive used alone, and to include any less amount of angle than one may choose.

After careful investigation I recommend that the rapid rectilinear type of lens (*f*/8 or even *f*/7) should be combined with a negative lens of half its focus, to form a really useful tele-photographic system (If the negative is less than half the focus of the positive there is danger of introducing outstanding aberration, for any but one extension of camera, and for other than parallel rays; this aberration is only removed by stopping down the positive lens, reducing both angle included and rapidity.) Negative lenses in this proportion of foci can be made of larger diameter than the lenses of the positive element, and a considerable angle can be included and necessarily greater equality of illumination is attained than when the negative lens is of smaller diameter than the positive. With the proportion of foci recommended, the attachment to the positive lens is not inconveniently bulky. Weaker negative lenses can also safely be employed, or, in other words, the focus of the negative lens may be more than half that of the positive; in this case the attachment is shorter, the magnification less, but the angle included greater.



The figure illustrates the combination of a 6 in. focus rapid rectilinear combined with a 3 in. focus negative combination. When the foci are known it is only necessary to know, or set the separation of the nodal planes N_1 N_2 to completely determine the equivalent focus and back focus (*i.e.*, the distance of negative lens to screen).



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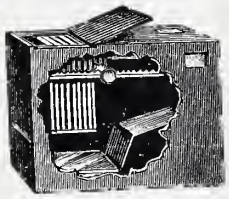
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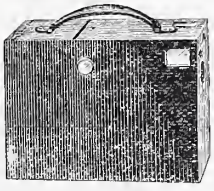
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If f and f^1 represent the foci of the positive and negative lenses respectively, a the separation, F the equivalent focus, and $B\,F$ the back focus, then the following simple *numerical* formulæ give the required information:

$$F=\frac{ff^1}{a+f^1-f} \qquad BF=\frac{f^1(f-a)}{a+f^1-f}$$

for the case in the illustration;

$$F=\frac{6\times3}{3\frac{3}{4}+3-6}=\frac{18}{\frac{3}{4}}=24$$

$$B\,F=\frac{3(6-3\frac{3}{4})}{3\frac{3}{4}+3-6}=\frac{6\frac{3}{4}}{\frac{3}{4}}=9.$$

Rule I.—To Find the Equivalent Focus of the combination: *Multiply the foci of the two elements together, and divide the result by the sum of the focus of the negative lens and the separation, after having subtracted the focus of the positive lens from this sum.*

Rule II.—To Find the Back Focus: *Multiply the focus of the negative lens by the difference between the focus of the positive lens and the separation, and divide the result* (as in the last case) *by the sum of the focus of the negative lens and the separation, after having subtracted the focus of the positive lens from this sum.*

[Note the importance of the separation as affecting the equivalent and back foci. If instead of making the separation $3\frac{3}{4}''$ we had chosen $\frac{1}{4}$ of an inch more, *i.e.*, $4''$, the equivalent focus of the lens would be $18''$, and the back focus $6''$ only; and if on the other hand we made the separation $\frac{1}{4}$ of an inch less, or $3\frac{1}{2}''$, the equivalent focus becomes $36''$, and the back focus $15''$. If the sum of the focus of the negative lens and the separation is equal to or less than the focus of the positive lens, then no focus is formed.]

It is interesting to examine the capabilities of combinations by the above rules, and thereby to determine for oneself the suitability of the ratio that must exist between the foci of the positive and negative lenses for any particular purpose. The separation between the nodal planes of the two elements is easily *written* for this purpose, but in practice is more difficultly measured.

The object of this paper is to place the matter in the simplest light possible, and happily there is a simple means of setting to work without any fear of mistake as to the conditions under which the instrument is used.

It rests on the determination of the *magnification* of the image *as compared to the positive lens used alone.*

Calling M the magnification, v *the back focus,* and f^1 the focus of the negative lens:—

$$M=1+\frac{v}{f^1}$$

in the particular case

$$M=1+\frac{9}{3}=4.$$

So that calling F the equivalent focus and f the focus of positive lens as before,

$$F=fM$$
$$=4\times6''$$
$$=24''$$

as illustrated in the diagram.

Rule III.—To Find the Magnification for any chosen extension of camera: *Divide the distance from negative lens to screen by the focus of the negative lens, and add one.*

Rule IV.—To Find the Equivalent Focus of the combination for any chosen extension of camera: *Multiply the focus of the positive lens by the magnification.*

Having readily determined the magnification, as also equivalent focus for a given extension of camera, the next step is to find the intensity of the telephotographic combination. This is measured by the clear aperture of the positive element divided by the equivalent focus, as in all cases. The intensity values or their equivalents are now always marked upon the diaphragm notation of positive lenses, so that the intensity of the compound system is most readily determined by reference to the intensity of the positive system and the magnification. It is expressed thus:—Calling I the intensity of positive lens and M the magnification as before,

$$\text{Intensity of system}=\frac{I}{M}$$

in the particular type of case illustrated:

$$\text{Intensity}=\frac{\frac{1}{8}}{4}=\frac{1}{32}$$

In the actual example illustrated, the intensity of the rapid rectilinear is $f/7$, and the intensity of the telephotographic system $f/28$, for the particular extension.

[Note.—With less magnification and less camera extension, the intensity increases.]

Rule V.—To find the intensity for a given extension of camera when magnification is known:—*Divide the intensity of vositive lens by the magnification.*

Simple rules cannot, unfortunately, be given for the remaining two data that should be known to fully determine the capacity of the lens system—viz., the plate that can be covered and the extreme angle included—but the formulæ to obtain them are readily used.

I give them applied to the case illnstrated.

(1) To determine the diameter of the plate covered:—

Calling D the diameter of the plate,
a the full aperture of positive lens $\frac{1}{8}''$,
a^1 ,, ,, negative lens $\frac{5}{4}''$,
and v as before, the back focus $9''$,

$$D=(v+f^1)\frac{avf^1+a^1f(v+f^1)}{f^1[v(f-f^1)+ff^1]}$$

$$=(9+3)\frac{\frac{1}{8}\times9\times3+\frac{5}{4}\times6\times12}{3[9\times3+6\times3]}$$

$$=12\times\frac{113\frac{5}{8}}{3\times45}=\frac{909}{90}=10{\cdot}1''$$

Thus it appears that with an extension of $9''$ from negative lens to screen, a circle of $10''$ is covered at full aperture—nearly sufficient to cover a "whole plate." In the diagram I have indicated the lens as covering only the diagonal of a 5×4 plate, but it will be seen that half of the whole pencil incident upon the front of the positive lens is received by the extreme margin of this plate. To find the covering power for any smaller stop inserted in the positive lens, it is only necessary to measure its diameter, and substitute its value in place of a in the formula given.

(2) The extreme angle included by the combination is given by the following formula:—

Calling a the angle, and F the equivalent focus, as before.

$$a=2\tan^{-1}\frac{D}{2F}$$
$$=2\tan^{-1}\frac{10{\cdot}1}{48}=2\tan^{-1}{\cdot}210416$$

From the table of natural tangents we find tan 11° 53′ = ·21043, and hence the extreme angle that can be included is 24° nearly.

When the lens is used to its utmost limits, it will be found that the angle included is approximately a constant for any extension of camera, *i.e.*, with a fixed aperture of the positive element.

It may be well to point out, in reference to the diagram, that a back focus (measured from the negative lens to screen) of only $5\frac{1}{2}''$ is really necessary to cover the plate indicated (viz., 5×4) if full aperture be used.

To work the matter out practically, we have for this a back focus of $5\frac{1}{2}''$. The magnification $M=1+=\frac{5\frac{1}{2}}{3}=2{\cdot}8$, and the equivalent focus $F=M\times f=2{\cdot}8\times6=17''$.

$$D=(v+f^1)\frac{avf^1+a^1f(v+f^1)}{f^1[v(f-f^1)+ff^1]}$$

$$=(1\tfrac{1}{2}+3\frac{\frac{7}{8}\times1\tfrac{1}{2}\times3+\frac{5}{4}\times6\times(1\tfrac{1}{2}+3)}{3[1\tfrac{1}{2}\times3+18]}$$

$$=1\tfrac{7}{2}\times\frac{1251}{24\times69}=1\tfrac{7}{2}\times\frac{139}{8\times23}$$

$$=\frac{2363}{368}=6{\cdot}4,\text{ the diagonal of a }5\times4\text{ plate.}$$

Further the angle taken in is

$$2\tan^{-1}\frac{D}{2\times F}=2\tan^{-1}\frac{6{\cdot}4}{34}=2\tan^{-1}{\cdot}1882$$

And from table of natural tangents, tan 10°40′ = ·1883, and thus the angle included is 21° nearly.

I have given a formula for the distance from the *flange to the focussing screen* in my paper before the Society of Arts (published March 3rd of this year), but have not given it here, as the "back focus" is most readily measured, and this measurement, as already pointed out, is the simplest cue to all further information that is desired or necessary.

I hope that the very unpopular "formulæ" contained in this paper may not detract from its interest to the ordinary reader, for

the formulæ are *readily interpreted* by any one with a knowledge of arithmetic.

In conclusion, I may add that the effect of the form of negative lens adopted is one that tends, by its moderate power, to flatten the field of ordinary aplanatic lenses without introducing "reverse" curvature; it minimises the tendency, in telephotographic systems generally, to introduce pin-cushion distortion, it eliminates the violent chromatic fringes brought about by negative lenses of the double concave type, and diminishes the astigmatic aberration in the eccentrical pencils.

The Elements of Photo-micrography.

BY "MIKRON."

(*Continued from page* 47.)

WITH regard to the preparations to be photographed, a few words on the subject will not be out of place, as the success of the photograph depends as much upon the suitability of the object as on the skilful manipulation of the operator. It is imperative that the prepared slide should be quite free from all foreign or extraneous matter, such as particles of useless tissue, stray fibres, or microscopical collections of dust, the appearance of which is always indicative of hasty or careless work, besides necessitating a considerable amount of trouble being exercised in spotting out before the negative will be of any use.

For ordinary microscopic work a little extraneous matter is not of much importance, as it is readily recognised when examining the slide; but it seriously reduces the value of a negative.

Crystals require to be illuminated by very oblique rays, or, still better, by polarized light, for photographic purposes. Under the action of polarized light they are amongst the most beautiful and interesting subjects. Moreover, there are many branches of science in which good photographs of crystals of pure salts would be of very great value. For instance, in pharmacy or medical science photographs of, say, the alkaloids would, in many cases, be of the greatest service. It is important that the preparations be formed by direct crystallisation on the cover glass, which should be previously washed in a solution of caustic soda or ammonia liquor to remove any trace of grease. And it must be borne in mind that the method of preparing the crystals frequently has a marked influence on their shape. If allowed to form by the spontaneous evaporation of their solution, they may exhibit quite a different appearance to those obtained by the evaporation of a solution which has been kept in motion. But to enter into a description of the various modes of treatment would occupy too much space; suffice it to say that in the majority of instances Canada balsam will be found a suitable medium for mounting the preparations. For photographic purposes it is important that they should appear well illuminated on a dark ground.

Diatoms occupy a prominent position among the interesting objects which receive general attention. The appearance of these minute organisms is well known, and their collection for microscopic examination affords an excellent stimulus to a country ramble. A green colour upon the surface of ditch or pond water usually indicates a good supply of diatoms. The surface of the mud in such places also forms a rich field. Many diatoms are best examined in the dry state, as their delicate markings become indistinct if immersed in a liquid. For photographic purposes the best effect is obtained by mounting them on the cover glass, instead of on the slide, as they are then brought nearer the objective. It is also advisable to gently burn the preparation, by passing through the flame of a spirit-lamp or Bunsen burner, before mounting, so as to further purify them, and make them adhere to the glass.

Transparent objects, such as many of the fungi and infusoria, do not require staining, as there is usually sufficient difference between their index of reflection and that of the medium in which they are mounted to give good definition.

The infusoria demand the greatest care in their preparation, in order that their structural details may be preserved. The employment of objectives of high power and a very delicate focussing arrangement will be required to reproduce such fine features as the cilia, flagella, etc., of these organisms. It is also advisable to photograph only from a field containing one isolated organism, owing to the impossibility of getting more than one plane in focus at a single operation. It will generally be found necessary to arrest the motion of the infusoria before attempting to photograph them. This may be done by adding a droplet of iodine solution to the fluid on the cover glass in which the organisms are moving, and then quickly inverting and placing on a clean slide. The iodine solution is composed of—

Iodine	1 part.
Potassium iodide	2 parts
Water	100 „

The photograph should be taken as soon as possible after the operation, as on standing a short time the preparation is very liable to spoil. They should be mounted in as thin a layer of liquid as possible, to lessen the risk of movement during the exposure. Usually water is the best medium for mounting these transparent bodies for photography.

Botanical specimens of plant hairs may usually be photographed as they appear on the leaf or stem, by making and mounting a very thin section. Others, such as long fibrous hairs, are best arranged in rows on the slide, and mounted in water. To obviate the difficulty of getting objects of this class mounted free from air bubbles, it is a good plan to moisten the specimens with a drop of alcohol, and then, before the alcohol has quite evaporated, add a drop of water; after which a thin cover glass is carefully lowered on to the preparation

With a little practice sections of leaves, stems, roots, and fruit may easily be prepared. The object should be immersed in water and slices cut off by means of a sharp razor. When cut they should be transferred to clear, and preferably distilled water. They may be mounted in water; but, frequently, it will be found advantageous to mount in Canada balsam. For this purpose the sections should be transferred from the water in which they have been soaking to a small vessel containing alcohol, so as to absorb the excess of water, and then into oil of cloves to remove the alcohol, finally they are placed on clean slides. The sections are then carefully spread out, a drop of balsam placed upon them, and covered with thin cover glasses. Distilled water, however, will usually be found quite sufficient, although at times it may be improved by the addition of a small quantity of glycerine to increase its index of refraction.

Many specimens of fungi are by no means suitable objects for use with ordinary plates, as their deep brown colour prevents the reproduction of structural details. But, either by the use of the filter screens or of orthochromatic plates, this difficulty is at once overcome, and excellent results may easily be obtained. The beginner should endeavour to avoid overcrowding the preparations, as this fault leads to irregularities which will give considerable trouble when they are photographed. As a rule water or glycerine, or a mixture of both, will form an excellent mounting medium. The best method of preparing them is to place a drop of the mounting fluid, say water, on a clean cover glass and add to it an exceedingly small piece of the mould to be examined—the fungus having been removed from the substratum on which it was growing by means of a fine pointed needle—the cover is then rapidly but carefully inverted and lowered on to the slide. If air bubbles give much trouble, the alcohol dodge, as recommended for plant hairs, may be of service.

When preparing objects for photography the desirability of having only one layer of cells should always be borne in mind. With sections this is often a difficult matter, but with unicellular organisms it may be obtained with greater ease.

Ordinary brewers' yeast is, perhaps, the commonest specimen taken as illustrating unicellular organisms. It may be photographed in its fresh state, after being largely diluted with water, or stained with an aniline dye, such as the fuchsine preparation. This stain, which is an exceedingly useful one for this class of work, is composed of—

Fuchsine	2 parts.
Absolute alcohol	15 „
Water...	85 „

In order to render the spores of bacilli or spirillæ more easily discernible, it is customary to employ contrast stains. And as the process may be carried out with very great advantage in many cases, a brief description of the method will be given. We will suppose that it is desired to counter-stain a growth of the hay bacillus (bacillus subtilis). A drop of an aqueous infusion of hay is placed in the centre of a clean cover-glass and carefully spread over its surface. A gentle heat may then be applied to hasten the evaporation of the liquor. The glass is then held in the forceps and quickly passed six or seven times through the flame of a spirit-lamp; the object being to scorch the *debris* and render its affinity for the dye less marked. The glass is then inverted and floated on the surface of a warm solution of fuchsine for about eight minutes, then rinsed in water and decolorized by passing through dilute sulphuric acid (1 : 10), then again rinsed under the water tap, and the operation rapidly repeated several times. The cover must then be flooded with a 2½ per cent. aqueous solution of gentian violet for about three minutes and again washed, and dried by the application of a gentle heat. A drop of water, or, if a permanent preparation is required, a drop of Canada balsam is placed on the cover-glass and the mounting finished in the manner described above. The best form of balsam for this class of work is that dissolved in xylol, as it does not dissolve the dye and is easy to work with.

When the objects are mounted in water it will be necessary to run

a ring of cement around the cover-glass to prevent the evaporation of the liquor during the exposure. This may readily be accomplished by the use of glycerin-jelly, which must, of course, be used warm. A good preparation may be made according to Kaiser's formula, which is as follows:—Take one part of finest gelatin and soak for about two hours in 6 parts of distilled water, then add 7 parts of glycerin, and for every 100 parts of the mixture add 1 part of concentrated carbolic acid. Warm until the flakes produced by the carbolic acid have disappeared, and filter whilst warm.

Les Petits Metiers and Photography.

By P. C. DUCHOCHOIS.

(*Continued from page* 48.)

THE aniline colours are also employed to impress by transfer photo-collographic images on silk and cotton. Photo-collography is well known. It is described in almost every treatise on photography, and we propose to describe in this magazine a simple process for amateurs. Therefore we will presently only explain the manner of effecting the transfer on the materials in question.

The aniline colour is prepared thus:—

Medium litho varnish	10 parts
Aniline colours	5 „

The aniline colour is first ground in exceedingly fine powder in a porcelain mortar and afterwards triturated with the varnish, to obtain a homogeneous mixture.

For printing, 4 parts of this is intimately mixed with 1 (one) part of wax melted in turpentine, and a few drops of linseed oil, if the ink is too compact.

The transfer is pulled off on albumen paper, not salted, then slightly damped, to soften the albumen, and immediately placed on the material, when the whole is submitted to a heavy pressure. This done, the back of the paper is wetted, and, in a few minutes, by slowly lifting it out from one corner, it leaves behind the image impressed on the silk or cotton.

After transferring, the image is often wanting in vigour, but to impart brilliancy it sufficies to vaporize it; that is, to lay on its surface three or four sheets of damp calico, and to pass over the whole an iron strongly heated.

The silk does not want any preparation before use, but cotton should be "animalized," as it is termed; that is, imbued with albumen, which should be rendered insoluble by steam. Mr. Rouanet, to whom we are indebted for the details of the process, states that he has thus obtained on silk with a coarse grain photographs which resembled very fine tapestries.

Photo-collographs in ordinary greasy ink are transferred on wood, marble, ivory, or celluloid by the above manner of operating, but the surface of the object should be previously coated with a thin layer of litho varnish. This process is much employed.

The applications of the photogravure process in the *petits metiers* have indeed a great importance. As applied for the decoration of small, or even large articles, it does not prevent the difficulties which sometimes are met with when it is a question of obtaining a plate engraved for printing. It is simple, and therefore one does not require much practice to succeed.

Very thin copper plates, well polished, are ground with a small bung of tissue paper and powdered pumice stone until a fine, even mat surface is obtained, and are then coated with the following bichromate albumen solution. The polished plates are found to be in the market:—

White of eggs (about 4)	100 parts
Ammonium bichromate	2 „
Water (distilled or rain)	50 „

Dissolve the bichromate, add a few drops of ammonia, then the albumen, and beat the whole to a very thick froth; let set now for about ten hours; decant the clear liquid, and, having mixed a very small quantity of india-ink, filter through flannel, to eliminate the bubbles of air.

When coated and drained, the plate is dried by fanning or at a low temperature, not over 52 deg. C. This done, it is exposed under an intense diapositive in line for a few minutes in the shade, and, on its removal from the printing frame, immersed in water for about six minutes to dissolve the albumen not rendered insoluble by light, and afterwards rinsed under the tap. The plate is then drained and rapidly heated over an alcohol lamp until it can no longer be held by the hand, or immersed in water at the boiling temperature, and finally allowed to dry before etching. The object of treating the plate in this manner is to insure perfect coagulation of the albumen.

The mordant consists of 50 grams of dry iron perchloride and 9 cubic centimetres of hydrochloric acid dissolved in 100 cubic centimetres of alcohol.

For the purpose in question the cuts should not be deep; if they retain the ink it is all that is necessary. Therefore, the plate should not be etched for more than from eight to twelve minutes by immersion in the alcholic ferric chloride solution, and this, of course after having protected the back of the plate and the margin with a stopping of varnish, which is simply a solution in turpentine of bitumen, and of a small quantity yellow wax.

After etching, the plate is washed, the albumen film dissolved in a solution of potassa, and the plate, well rinsed under the tap, is set aside, to dry spontaneously, or by fanning, when the plate is inked or rather coated with the following varnish, applied with a flat brush:

Bitumen	30 parts.
Yellow wax	3 „
Lampblack	5 „
Turpentine or benzole	500 „

This coating being dry—well dry—the ink should be removed from the ground—that is, everywhere but from the cups which form the image, and this is done by rubbing with a piece of charcoal (from soft wood) cut flat on one of its surfaces. The charcoal is specially made for that purpose, and easily procured.

The engraved image thus made is black on a yellowish red mat ground, the copper.

To obtain a white ground, the plate, inked, etc., is silvered by electrotypy. A decomposition cell, containing the following electrolite, acted on by a single Daniell's battery, is sufficient:

Cyanide of potassium (pure)	2 parts.
Nitrate of silver	1 part.
Water	100 parts.

The plate can also be silvered without a battery; thus, dip it in a solution of common salt, then rub it with a mixture of—

Chloride of silver	1 part.
Alum potash	2 parts.
Common salt	8 „
Cream of tartar	8 „

Wash, dry, etc.

The following liquid is employed as a wash for the same purpose:

Nitrate of silver	10 parts.
Cyanide of potassium	20 „
Water	150 „

Zinc is sometimes selected to make engravings for decorating small articles. The image is black on a mat white ground. The *modus operandi* is similar to that described in engraving on copper.

By this process only line pictures, copies of engravings, etc, can be reproduced. To engrave a photograph from nature—that is, a picture in half tone, the copper plate should be grained by resin, as done by engravers, or, and which will likely be preferred by amateurs, the diapositive itself is grained by the Berchtol method.

Here is one of the manners of operating: A screen, such as employed by photo-engravers in relievo, but ruled in one direction with at least one hundred and fifty lines to the square inch, is placed in the printing frame; it must be square—and over it is placed a slow Carbutt's gelatino-silver iodo-bromide plate, one of those employed for lantern slides, and exposed at a certain distance —say, 1 metre, from a petroleum lamp for a fraction of a second; then in the dark necessarily, the photo plate is turned at right angles on the screen, and again exposed for an instant. Now, the screen being removed and replaced by the negative, one proceeds, as usual, to obtain a diapositive, which, developed by hydroquinone, will present an image formed by a very regular granulation.

As said in the foregoing lines, one obtains by these processes a black image on a mat ground; but if the engraving on the metal be well polished, and discarding the inking, if it is thought best for the effect, the image will show a mat with the colour of the metal on a brilliant ground, and it may be silvered, to increase the contrasts by inking the ground before dissolving the photo film in order to form a reserve.

By electrotypy duplicates of great thinness are obtained, which, on account of their flexibility, can be applied on uneven surfaces, or pasted on leather, cardboard, etc., for various uses. The image is then in relievo, unless, instead of a diapositive, one employs a negative to impress the photo film.

The dusting process has also been applied in the small trades, especially for the decoration of glass in gold. It is simple; thus: a plate quite clean is immersed in water, and, when wanted for use, removed, drained, then coated with a mixture of—

Gum arabic	12 parts.
Glucose	20 „
Honey	4 „
Ammonium bichromate (sat. sol.)	30 „
Water	240 „

After allowing the excess of solution to drain for two minutes, the plate is placed in an inclined position on several thicknesses of very

not blotting paper and flannel, to hasten the dessication and avoid the tendency of the bichromate to crystallise.

The photo film is exposed under a negative for six or seven minutes in the sun; and on its removal from the printing frame, allowed to become tacky by spontaneously absorbing moisture from the air, or by breathing upon it, when it is dusted with a bronze powder of medium fineness. The bronze takes on the parts still hygroscopic, that is, on those not or little acted on by light, while the wholly insoluble parts will not take hold of it and form the ground of the image. Now, when the powder in excess has been removed by rubbing pretty heavily with a bung of cotton, the plate is coated with collodion, and, as soon as the film is set, immersed in water for a few minutes, to eliminate the bichromate, then rinsed and dried at once, to prevent the oxidation of the metal. This done, the plate is backed with a black or coloured varnish, which gives to the image its full value.

The collodion is made according to the following formula:

Ether	60 parts.
Alcohol	40 ,,
Pyroxyline	1 part.

The black varnish is a mixture of—

Bitumen	20 parts.
Yellow wax	5 ,,
Lampblack	5 ,,
Turpentine...	120 ,,

To conclude, we will describe a process by which looking-glasses can be richly decorated with a gold border. We know that this has been done mechanically by the application of masks, etc, but not with the perfection and the delicacy of detail which photography alone can produce.

A glass plate is silvered. Many processes have been published for this purpose. We will describe one of them, that of M. Petit Jean, which generally is employed in the industry: 100 parts of silver nitrate are dissolved in 62 parts of concentrated aqueous ammonia, and 500 parts of distilled water added. After filtering, the solution is diluted with sixteen times its bulk of distilled water and a solution of 7½ parts in 30 parts of distilled water is added by small quantities, stirring well. This constitutes the first solution. The other is prepared in the same manner, but with twice the quantity of tartaric acid.

To silver it, the plate is first cleaned with putz-powder and a chamois leather, washed with an india-rubber scraper and heated to about 45 degrees C.; then as much of No. 1 solution as the glass will hold is poured over it and allowed to act for twenty or twenty-five minutes. After this period the surface of the plate is cleaned with chamois leather and tepid water and immediately flowed with the second solution, when in about fifteen minutes a strongly adherent specular film is formed.

The silvered plate is coated for the purpose in question with a layer of bitumen of judæa—a solution in 3 or 4 per cent of benzole or of pure turpentine will do—and when this is quite dry, which requires from fifteen to twenty minutes, the plate is exposed under a diapositive representing the drawing of the border in lines. The diapositive should be intense and free from fog of any kind in the clear glass. The exposure to the sun must be lengthened to half an hour, rather more than less, if the diapositive is of good intensity, and this is a *sine qua non*. On its removal from the printing frame, the plate is allowed to cool, then immersed in a bath of ordinary turpentine, where, by agitating, the bitumen not rendered insoluble by the luminous action will soon dissolve, and as soon as the lines of the design appear clear and sharp, the plate should at once be washed under the tap and gently rubbed with a bung of cotton. This done, the plate is dried and exposed to light for a few minutes, then immersed in a solution of nitric acid of 3 per 100 of water, which dissolves the silver in the parts not protected by the insoluble bitumen. Now, the plate is rinsed, dried, and it remains to gild the border and to protect the whole by a coating of paint consisting of minium, siccative oil and turpentine.

To gild the border, it suffices to brush a sizing upon it, then to apply gold leaves as done by the gilder for lettering shop windows, and when the sizing is dry, the non-adhering gold is brushed off and the remainder polished with an agate or any convenient tool.

This and every one of the processes described in this paper are susceptible of many other applications which suggest themselves.

The third "Photomnibus" prize competition has resulted as follows:—First prize of two guineas and bronze medal, Frank W. Robinson (aged fourteen), 140, High Street, Lewes, Sussex; second prize, one guinea, Miss A. L. Walker, 38, South Parade, Southsea; third prize, Chas. Hunter, 30, Clifton Street, Margate. Three extra prizes were also awarded to H. Staynes, H. J. Robinson, and H. C. Morris. The fourth competition closes on November 30th; full information may be had from Wormald and Co., Rodney Road, New Malden, Surrey

Holiday Resorts and Photographic Haunts.

KING'S NORTON (WORCESTERSHIRE).

By Digby H. W. Preedy.

King's Norton, six miles from Birmingham, is a picturesque village, although it is so near the great iron city. The principal attraction for the photographer is the church. It is a fine old edifice, taking its origin in the thirteenth century; it was restored about twenty years ago. The interior, which is rather dark, makes a good subject for a lantern slide. The chancel is very handsome and demands attention. The east window, which is the oldest part of the church, is of the Early English style of architecture. The decorated style, which marks the fourteenth century, may be noticed in the Piers and arches of the nave, and in the windows of the north aisle. But the glory of our church is the steeple, a noble work of the perpendicular style (of the fifteenth century), which is mentioned by the historian Leland, in the time of Henry VIII., as a "goodly pyramis of stone over the bell frames." There is a monument at the west end of the church most deserving of mention, consisting of a knight in armour with his wife by his side. The exterior of the church may be taken from many different spots with equal advantage, one from the middle of the green especially. In the churchyard stands an old building, called by the inhabitants the "Old School," which in truth it really is. It was founded at the same time as the Birmingham Grammar School by Edward VI. It was used as a school till quite recently. Adjoining the churchyard is another ancient building, in which Henrietta Maria, wife of Charles I., slept, when she came from Walsall on July 10th, 1643. Both the old Grammar School and this building make extremely good pictures. About half a mile from the church is Hawkesley House, which was besieged in 1645. The first Wednesday in each month is sale day at King's Norton—then is the time for the snap-shottist. In front of the church there is a large green nearly surrounded by houses, which go to form the village. It can hardly be called a village, as the population is very large, and is increasing on account of the factories, which, I think, are quite destroying a very pretty village. The surroundings of King's Norton are good.

Wootton Wawen, a few miles away, is a spot which no photographer should miss. The church, which is very old, and which also has some old chain Bibles, stands on a hill, which slopes down on one side to a very nice pond. This makes a splendid picture with the church reflected on the water.

Solihull, Knowle, the Lickey Hills, and many other places provide ample scope for any photographer.

On account of the death of my father (the Rev. Digby H. Cotes-Preedy), who was the vicar of King's Norton, I shall soon be leaving the Vicarage, which is my present home, in the garden of which are some lovely trees to take the church from. Anyhow, I shall be pleased to help to the best of my ability any brother amateur who would like to know the situation of the chief points of interest.

Societies' Notes.

Oxford University Club.—At the last meeting of last term the Hon. G. L. Parsons was elected Hon. Secretary in place of Mr. A. Eglington, B.A., Lincoln, resigned. All communications should be addressed Hon. G. L. Parsons, Balliol College, Oxford.

Guildford Photographic Society.—The Guildford Photographic Society has decided on starting an archæological photographic survey of the district round about Guildford, and if carried out with system and precision this new effort should be of considerable value to all students of Surrey life and history. A suggestion to this effect was, we understand, made to the council of the society by Miss Powell, of Piccard's Rough. Miss Powell's suggestion is that every building of antiquity in our neighbourhood should be photographed before it is too late. The photographs should be as complete as possible, giving details of work, views of both back and front and in various directions, and in some cases embracing interiors. The district should be mapped out, certain members be responsible for certain villages, and leisure time and holidays utilised for this class of work. The amateur photographer is sometimes somewhat of a bore—at times unnecessarily inquisitive, and too much devoted to getting pretty pictures, and too little to practical and useful effort. But here is an opportunity for the amateur photographer to justify his existence. The value to students of a

careful survey of the county will be inestimable. No one will, we hope, refuse permission to the entrance upon his premises of the properly-authenticated operator with such an object in view. The aim of the country walk is at once supplied, but, far more, a distinct benefit is being rendered both to the present and succeeding generation by this effort. The project should receive special support from the Surrey Archæological Society, to whose new archæological map this survey will prove a most valuable adjunct; and all amateur photographers in this neighbourhood should join hands with the society in the work. Many of them have probably many views already on hand of Surrey manor-houses, cottages, gables, chimneys, village shops, churches, pumps, crosses, inns, staircases, doorways, fireplaces, even of outhouses and farm buildings that are old work or contain portions of early architecture. Prints of all these, properly named, should be sent to the society, and suggestions as to concerted and practical action will be gladly received. In process of time the question of a permanent home of easy reference for all this work will be discussed, when the great question of a Surrey museum comes again to the fore. Meantime much can be done, and no amateur photographer worthy of the name should refuse to help in a work of such great importance.

The Shaw Church Institute Photographic and Art Society will hold an exhibition at the latter end of October. Full particulars will be announced later on.

Societies' Meetings.

Brixton and Clapham.—An ordinary meeting was held on 18th inst., the President, Dr. J. Reynolds, F.R.G.S., occupying the chair. A member of the newly-formed Committee of Instruction was present for the purpose of assisting less experienced members in the more elementary principles of photography and answering questions relating thereto. The attendance of members showed the necessity for forming such a committee, and it is believed that the result of such a step will be to strengthen the number of members of the club to a considerable extent. This was the first attempt in the history of the club to form such a committee, and at the meeting two nominations for membership and promises of others were given in. Mr. Baldwin, of the Eastman Company, gave a very interesting demonstration on Solio paper, and toned several prints by the separate and combined baths with great success. Members were invited to comply with the request of the P.S.G.B. for a representative set of lantern slides and results of modifications of the several printing processes, and the meeting was then closed. The next meeting will be held on August 1st, when Messrs. Fuerst Brothers will demonstrate the working of Amidol.

Hackney.—Ordinary meeting held on 18th inst., the President, Mr. Houghton, in the chair. Various books were added to the library. Mr. Pollard showed and explained his reduction camera. Mr. Hensler asked how to intensify a film which had had retouching medium on. Mr. R. Beckett advised use of turps first to remove retouching medium, and proceeding in the adopted manner. Mr. Barnes asked the best way to develop an old plate. The Hon. Secretary said use less alkali. Mr. T. H. Smith asked what proportions of Amidol should be used to develop a much over-exposed Cadett plate. Mr. Beckett said reduce the quantity of sulphite solution to quarter the quantity, 4 gr. bromide, and double the Amidol. The Hon. Secretary (Mr. W. Fenton-Jones) then read a paper on "Exposure Tables and Meters." He advised before actual practice, overhauling camera backs, dark-room, to see if white light was perfectly excluded, and when using lens to cover up diaphragm slot. The sun's position had a great deal to do with time of exposure. Use as large a stop as possible, consistent with good defining powers. Rain cleared the air, and many a good picture could be taken when raining. Would not advise judging by amount of light through diaphragm stops. Experience and judgment are best, but a table or meter to start with is advisable. Exposure of bromide plates and papers is best tested by giving varying test exposures and then recording for future use. Plates were not always the speed they purported to be. Mr. Penny asked, was it best to use one table and plate? Mr. Hensler had used Watkins', but not successfully. Mr. Nunn had used Hurter and Driffield's, saving himself a lot of plates. Mr. Hankins asked about Cadett's developer being a quickener up of plates. Mr. W. Fenton-Joses said he did not study the developer when exposing, and thought it erroneous. Would advise one plate and one table, and that of a simple kind. Mr. Avent had used nearly every table in the market, and said that whilst he had found them right around London, in the country they had given him wrong exposure. He was of opinion, too, that a table should be as much simplified as possible.

Leicester.—On the 13th inst. a number of members of this society went by special train to Warwick, where special permission had been obtained, through the kind permission of the Earl of Warwick, to photograph the castle grounds. As, however, the party arrived rather late, the castle itself was left out of the programme, and the interesting bits in the immediate vicinity occupied the attention of the members, and offered quite sufficient work in the quaint buildings and streets and the river and its ancient associations. In spite of the dull weather some good work was done by time exposures, snap work being out of the question. After the members had exposed their plates, an adjournment was made to the Dale Temperance Hotel, the members being in fine trim for a substantial tea, after which they took the train for Milverton Station, about a mile from Warwick proper, and there taking the train were soon at home again after an enjoyable outing and a promise to revisit the place and castle at an early date. The President, Mr. J. Porritt, was leader of the party, and the next meeting was arranged for Belvoir Castle, on Saturday, the 29th inst., and the President cordially invites any member of the sister societies who may wish to join in the excursion to this historic mansion.

North Middlesex.—The first of a new series of instruction evenings was successfully brought off on the 19th inst. The subject was "Development modified to soften harsh contrasts or under-exposure." As the lecture and demonstration were for the benefit of tyros, an elementary statement of the generally accepted views as to the action of light upon the sensitive plate was given, and the properties of the reducing agent, the restrainer, and the accelerator explained. The reason for and against the use of sulphite of soda as a preservative were stated, and beginners were advised either not to use it at all, or in smaller quantities than generally given. Messrs. Hurter and Driffield's views of the impossibility of altering density ratios by development were briefly stated, and Mr. C. H. Bothamley was quoted as showing that, while the density ratios might be unalterable, the printing qualities of the negative and their modification were well within the hands of the worker. For the purposes in view the developer recommended was: Pyro ½ gr., bromide of potassium ½ gr, carbonate of soda up to 12 gr., water 1 oz. When the shadow detail was out this developer must be thrown off and a fresh one substituted containing pyro 2 gr., water 1 oz., no bromide or soda. Plates exposed at the special outing to Kingsbury on the 15th inst. were then developed, and appeared to be satisfactory. Prints from them were to be shown at the meeting on 24th inst. The next instruction evening will be on the 23rd August, the subject being "Development modified to improve flat subjects or over-exposure." Visitors are welcome.

South London.—Ordinary meeting, 17th inst., the President, Mr. F. W. Edwards, in the chair. Messrs. Dicker and Tredray were elected members. The evening was devoted to the discussion of methods of combination printing. The following were suggested:—Draw round the outline of the object to be printed with a thick pen filled with indian ink. When the ink is dry block out the remainder of the negative with black varnish, and when dry print. The printed image can now be covered with gamboge or other non-actinic medium (which can be removed during washing), and the balance or such portion of the picture as is required, obtained from a second negative. Care must be taken to print both portions equally. If any white lines appear round any portion of the finished picture these must be filled in with colour, care being taken to match the tint of the picture. Alternatively the second negative may have blocked out a portion of equal shape and size to that printed by the first negative. To print skies in pictures where there is not a large quantity of fine foliage against the sky, a print is made on silver paper and the landscape portion is carefully cut off from the sky with a sharp penknife or scissors, and the two portions of the print allowed to discolour, and used as masks, one being used to cover the landscape negative when the sky is being printed from the sky negative, and the sky portion used when the landscape portion is being printed. Skies must not be printed too deeply, or they will have the appearance of being in advance of the landscape. The President suggested stripping negatives with Cresco-Fylma, and cutting out portions of the stripped films and combining them on an old negative glass. By this method prints are obtainable by one printing and a considerable saving of time effected where a large number of prints are required.

Stockport.—At the usual monthly meeting held on the 12th inst. an exhibition of hand-cameras was held. Several of the leading manufacturers had been unable to send specimens of their work, owing to the busy season. However, Messrs. Shew, of London, sent seven of their cameras for inspection, and they received a large share of attention on the part of members present, and were greatly admired, both for their extreme lightness and portability, and for the excellence of their manufacture. The Artistic Photographic Company, London, sent a sample of their Zoka camera, which for price is certainly a marvel, and no one should be without a hand-camera, considering the price, 12s. 6d. Mr. Miller, of

Salford, Manchester, attended the meeting in person, and brought his two hand-cameras, the ordinary Adelphi and the Reflecting Adelphi, and explained their construction and working to the members, and as a sample of the magazine type it was universally admitted to be the best all-round hand-camera before the society. Many of the members having hand-cameras of various makes brought them for inspection, and what with the cameras and the exhibition of work done with the various types, the meeting was one of the most interesting and enjoyable of the year.

SOCIETIES' FIXTURES.

July 27—Uttoxeter.—Excursion to Dovedale and Ilam.
„ 27—Northamptonshire.—Excursion to Castle Ashby and Whiston.
„ 27—Harringay and Finsbury Park.—Lecture on "Photographic Lenses," by Mr. J. H. Dallmeyer.
„ 27—Oldham.—Monthly Meeting.
„ 27—Leamington.—Excursion to Wappenbury.
„ 27—Liverpool.—Mr. J. A. Sinclair will show and explain to the meeting the latest photographic specialities.
„ 29—Huddersfield.—Exhibition of Wild Flowers. "Evolution of Fibro-Vascular Bundles," by John Schofield.
July 29—Bristol (Camera Society).—Excursion to Brandon Hill.
„ 29—Staffordshire (Potteries).—Excursion to Churnet Valley.
„ 29—Manchester.—Ramble to Taxat and Valley of Goyt.
„ 29—Oldham.—Ramble to Oldham Park and District.
„ 29—Northern Photographic and Scientific Association.—Excursion to Rickmansworth.
„ 29—Gosport.—Excursion to Shanklin and Ventnor.
„ 29—Leytonstone.—Excursion to Battersea Park.
„ 29—Hackney.—Excursion to Belvedere Park.
„ 29—Birmingham.—Half-day Excursion to Salford Priors and Cleeve Priors.
„ 29—Goldsmiths' Institute (Camera Club).—Visit to the Tower of London.
„ 29—Hackney.—"Daylight Enlarging."
Aug. 1—Cheetham.—"Hand-Cameras."
„ 2—Photographic Club.—Report of Delegates. P. C. U. K.
„ 2—Manchester.—Ramble to Sherwood Forest.
„ 2—Bolton.—Excursion to Alderley.
„ 3—Aston (Nat. Hist. and Phot. Soc.)—Micro. and General.
„ 4—Lewisham.—General Discussion.
„ 5—Oldham.—Ramble to Speke for Speke Hall.
„ 5—Lincoln (Camera Club).—Excursion to Nocton Park.
„ 5—Bristol (Camera Society).—Excursion to Avonmouth.
„ 5—West Kent.—Excursion Up River; Leader, Mr. G. Grant.

To Correspondents.

All communications for these columns are to be addressed to **The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.**

Rules.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S Post.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES.

6136. **Changing Bag.**—Can any reader kindly give me a few hints on making a changing bag for quarter-plates, which would act as focussing cloth as well?—Alfred Elce.

6137. **Lake District.**—Will be glad to meet with brother amateur spending fortnight in above place, leaving London, say, on the 4th August. Shall also be obliged if anyone can recommend reasonable lodgings at Windermere or other village. Address with Editor.—Ampho.

6138. **Buenos Ayres, etc.**—(1) The name and address of some good photographic materials' agency in Rosario; failing there, in Buenos Ayres. (2) What kind of prices, fancy or otherwise, are charged for materials in those places? and a little general information about Rosario.—P. F. G.

6139. **Folkestone.**—Can anyone inform me of a dark-room at Folkestone, and if I can buy the Ilford plates there?—Burrows.

6140. **Hard Negative.**—Would any amateur inform me if it is possible to make a hard negative thin, so as to print quicker without losing detail?—Amateur.

ANSWERS.

6130. **Beverley and its Minster.**—In answer to "Rambler," he should apply to the vicar of the minster for permission to photograph the interior. I do not know of any guide-book, but you may be able to get something of what you want to know if you write to Green and Sons, Market Place. There are several nice bits for the camera about Beverley. If "Rambler" cares to write I will send him full particulars per post.—J. C. Cook, Walkergate.

6132. **Exposure for Sunset.**—I always find the best pictures of sunsets are obtained by taking them with a shutter working about 1-30th of a second and well stopped down. Careful development must follow. I always take my sunset pictures on an ordinary plate.—D. H. W. Preedy.

QUERIES UNANSWERED.

June 2.—Nos. 6102.
„ 9.—Nos. 6106, 6108.
„ 16.—Nos. 6109, 6110, 6111, 6112, 6113.
„ 23.—Nos. 6115, 6116.
„ 30.—Nos. 6118, 6119, 6120, 6121, 6123.
July 7.—No. 6128.
„ 21.—Nos. 6131, 6133, 6134, 6135.

EDITORIAL.

Special Notice.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* before Tuesday morning's *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—Ed. Am. Phot.

H. G.—Yes, you are quite at liberty to send in prints from negatives taken under the conditions named.

J. T. Hunt.—(1) About two-thirds of original cost is the usual run. (3) The only recent book is "Studies in Photography," by Andrews, price 3s. 6d., from our publishers.

F. Henderson.—We do not undertake to reply by post. You do not state whether you want to get a black background on the negative or not. This can be done, of course, by putting black velvet behind the figures. If you have the negatives we can see no simpler method than cutting off the film as you are now doing. You can, of course out out a mask for the figure and allow the other part to print, but this would be even more difficult than cutting the film from negative.

J. L. Heath.—You will find no trouble with the customs. We have had several articles on Holland and Belgium in back numbers. Plates can be obtained in Antwerp, Brussels, Bruges, Ghent, Liege, Amsterdam, etc.

Rufus.—Your only fault seems to be not toning long enough. You might improve matters by placing one or two spoilt untoned prints or clippings of paper in the bath and leaving, or warming the bath slightly would hasten matters.

Roland.—Ordinary alum will do, so will Glauber salts for the combined bath.

F. Redmayne.—Always pleased to meet you as far as we can.

S. E. F. Jerrett.—For Greenwich Park apply to H. W. Primrose, H.M. Board of Works, Whitehall, S.W. For Kew apply to the Director of the Gardens.

F. Turner.—We will try and find out for you.

Geo. Hankins.—You are still entitled to compete for slides.

S. C. S.—There should always be a flocculent precipitate in Monckhoven's intensifier; cyanide of silver is soluble only in excess of cyanide of potash. If your solution was quite clear and colourless it would attack the details of the shadows of negative.

Venus.—7, Bedford Row, W.C., is the address you want.

P. O. P.—We can always succeed best with the sulphocyanide with a little carbonate of soda added. Had you toned longer in Welford's bath you would have got the tone you want.

H. Hall.—Your carbon was squeegeed to the wrong side of the transfer paper, hence the blisters. The right side of the paper is coated with gelatine and looks rather more shiny than the other, and the wrong side used to be stamped with blue ink S. T. What are your difficulties in platinotype? If we can help you we will.

R. H. M.—Thanks for letter. We should like to see negatives before saying anything definite.

P. Betts.—We should advise you to get B, which is quite equal to the other set.

P. F. G.—We regret that we can give you no information at all about the places you name, but we insert as a query.

T. T.—If you would purchase an "A.P. Annual" you would find that there are two dealers and two dark-rooms at Blackpool—Mr. Garland, 24, Foxhall Road, and J. Jackson and Son, 61, Talbot Road.

A. W. Chant.—Prints may be mounted in whatever fashion you like for our competitions.

H. F. Linging.—We will certainly examine your lens for you if you send it up. The rule is when copying an object the same size there must be just double the focus between lens and object and lens and plate, so that the distance between object and plate would be four times the focus, and in the middle would be the lens. There is with every focus and every size of object one position only, in which the lens, object, and plate must be put.

Rhonddaite.—(1) The City Sale and Exchange Rooms, 53, Lime Street, E.C., will supply goods on easy instalment system. (2) There is no book which treats of all the subjects you name. Lyonel Clark's book on "Development," 1s.; Hubert's "Art of Retouching," 1s.; Wheeler's "Enlarging," 1s., would suit you. These may be had from our publishers.

R Malden.—The speed of plates marked H. and D. are exactly in the proportion of the numbers, so that your ordinary plates are practically one-eleventh more rapid than the rapid. This is an anomaly that we cannot explain. Ignore the inertia altogether; it is only taken into account when determining the speed of the plate.

Shutter.—You can make an ordinary drop shutter from a cigar box, which would cost you about a penny, but when such shutter can be bought well made of mahogany for about 2s. 6d. or 3s. it is hardly worth while making one.

Penzance.—The paper you mean is ordinary albumenised paper, which is tinted green. This may be obtained from most dealers, such as Watson (of Holborn), Fallowfield, Adams, etc. It is printed on and used exactly the same as ordinary albumenised paper.

Amidol.—You can use almost any negative formula by adding bromide. Try the following:—

Amidol	5 gr.
Sodium sulphite	50 „
Water	1 oz.
Potass. bromide	5 gr.

This will give black tones. For a restrainer use 10 per cent. solution of acetic acid. For grey tones use the above mixed with an equal quantity of water. You need not use any clearing bath, but it is advisable to use the acid fixing bath.

Platina.—(1) Either your plate has been kept a very long time or else you had a dirty dish. We should say that the plate has been kept for some months either in the damp or where gas fumes could get at it. (2) The print-out platinum paper does not give such good results as the cold-bath platinotyps paper, but the results should be equally as permanent.

Hartinpol.—(1) Printed a little too deep, the pink tinge is not pleasing, the white spots are very distracting. We should certainly pick these out with a knife. (2) Printed far too deep, and slightly underexposed. The print is somewhat patchy too. (3) You might well have raised your front so as to have cut off some of the foreground and included more sky. (4) Ditto. The prints show careful technical work.

For "Sale and Exchange" see pages xiv. & xv.

The AMATEUR PHOTOGRAPHER

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No. 461. Vol. XVIII.] FRIDAY, AUGUST 4, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—Bristol and West of England Exhibition—"Photography at Home"—The Month—The Death of the *Photographic Gazette*—Too Many Societies—One-Man Fever—Success of Societies—Madras Exhibition—International Exhibition at Paris—Art *v.* Technique and Science—Convention Number of *Photographic Times*—Our Competition—Nom de Plume for Competitors.

The Month.

Flotsam and Jetsam, by Anchorite.

Articles.—Rivalry and Co-operation (Hinton)—The Photographic Convention—Latitude in Exposure and Speed of Plates (Hurter and Driffield).

Holiday Resorts.—Yarmouth—In Kirkcudbrightshire—A Holiday on the Usk.

Illustrated Supplement.

Societies' Notes.

Societies' Fixtures.

Societies' Meetings.—Bath—East London—Hackney—Hexham Liverpool A.P.A.—Y.M.C.A. Southampton—North Middlesex—Walsall.

EDITORIAL DEPARTMENT.—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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Postal Union	" " 6s. 6d.	" " 13s. 0d.
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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 51, Seascape and River Scenery.—Latest day, August 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, September 1st, 1893.)

The Bristol and West of England Amateur Photographic Association will hold their triennial exhibition at Bristol in December and January, full details of which we publish elsewhere.

We hope to be able to announce the awards of the judges in our "Photography at Home" competition next week. By the time our readers receive their paper we hope all the prints will be in the judges' hands.

Our abstracts, "The Month," are very short this time. Holiday-making is the universal rule evidently, and then, to make matters worse, the English journals have been filled with Convention matters, so that our abstracts are decidedly lean.

The current number of the "Photographic Gazette," the journal of the West Surrey Photographic Society is to be the last. The Editor says, "With the West Surrey we have done. At a committee meeting held at the end of June, a resolution was passed to the effect that as a society journal we were to die in September. With all due respect to this resolution we prefer to die at once. The matter is in our own hands, as it happens, and we do not care to press ourselves on an unwilling society any longer. We have used our power. This, then, will be our last number."

We have not the space to spare to abstract all that the Editor, Mr. G. H. James, has to say about this, but, to say the least, it is a very curious episode, and our sympathies are with Messrs. James, Seward, and Smith for what might be stigmatised as the somewhat scurvy way in which they have been treated.

There is one sentence, however, we cannot allow to pass without comment. "The journal was started for the benefit of the society and its members. *It is a strange fact that the only place where it has not been supported is at the very society* it tried to benefit." There is in the sentence which we print in italics a text for a sermon, which, however, we do not intend to inflict on our readers.

But we quote this merely as a strong piece of circumstantial evidence in favour of the statement that there are too many societies. If that spiteful jade, Rumour, is telling the truth, there is more than one suburban society in the last throes of a long drawn out agony, and we have heard that no less than three South London societies are in a very bad way.

The members of one society look forward to disbandment with gloomy faces, recognising too late that the "you scratch

my back and I'll scratch yours" policy is in the end no good. The officers of a society must offer solid food and palatable food to its members, or else death must ensue through sheer lack of interest fostered by starvation. We do not all like a collection of formulæ and scientific papers, nor, on the other hand, do we all appreciate the inane and self-conceited drivel of the would-be artist-photographer. There is the happy medium.

WE hope our readers who may also be officers of a society will forgive us if we state that too often local suburban societies are got up by one or two men for their own aggrandisement. Too often these men are the "Sir Oracles," and nothing can be said or done which they will not turn to their own aggrandisement. We have often told the tale, but it will bear repeating, of receiving a report of a certain well-known society in which one man's name appeared no less than twenty-seven times, the report occupying about a column of our paper. Possibly we need not add that the report did not appear as sent to us.

STILL, this is but one instance, and it is notorious that only a short time ago one of the leading London societies was suffering from the one-man fever till a drastic remedy was applied by a few determined individuals, which has now scotched the evil.



A Roadside Scene.

THE success of a society depends upon good officers and good members, but—and a big but too—there must be no one man as the ever-prominent oracle. There may be, and should be, a moving spirit, but he must work darkly and be content to sink his own personality in the good of the society.

WE have seen lately an enormous increase in the number of photographic societies in a limited area, and whilst not for one moment deprecating such increase if necessary, still we venture to ask whether better results may not ensue from a combination or absorption of some of the smaller societies by the larger or older ones.

WE have already announced the holding of an exhibition at Madras, and now, quite late in the day it seems to us, the Committee of the Phot. Soc. of India have determined to confine it to amateurs and professionals in India and the East, except the class for apparatus and appliances.

THE "Photo Club de Paris" will hold an international exhibition from December 10th to 30th. It is to be another Salon, for the rules state, "Le but de l'exposition est essentiellement artistique, ne pourrant y figurer que les œuvres qui, en dehors d'une bonne exécution technique, présenteront un réel caractère artistique par le choix du sujet, son éclairage, ou la composition du tableau." Entry forms, etc., may be obtained prior to November 1st, from M. le Secrétaire général du Photo-Club, 40, Rue des Mathurins, Paris.

IF "Salons" are to be en règle, we shall soon find that scientific and technical exhibitions will be started in which artistic merit will immediately disqualify any picture. "Art versus technique and science" bids fair to take the place of the old question, "Amateur v. professional," which we thought fairly dead, only that one of our contemporaries is now filled with the rabid ravings of incompetent professionals against us poor amateurs.

THE Convention number of the *Photographic Times* of New York, U.S.A., is a goodly number of twenty-four pages, and is illustrated with a photogravure and numerous process-blocks. If this number is a sample of what the magazine will be under Mr. Walter E. Woodbury's editorship, it will do well. But—the carping critic has always a but—we should have liked to have seen the credit of the article on "The Action of a Lens Simply Explained," given to the true author, Mr. T. Smithies Taylor, of Messrs. Taylor, Taylor, and Hobson, of Leicester. It was a little too bad to absorb his diagram and slightly alter his lecture and then sign it W. E. W.

WE may pass one remark anent our competition, which fills our Supplement this week. The prints were placed in the hands of three judges, and "my certies" they have right royally judged, and few are the prints placed in the first class. To the other competitors we would say—Be not discouraged, a good drastic remedy like being placed in the second or third class should do you good.

WE hear by a side wind that some have been deterred from competing in our competitions by the fact that we publish the names of competitors. We are accommodating to the very last degree, and if anyone wants our coat, we give him the breeches, and a bed and breakfast into the bargain. Anyone is at liberty to assume a nom de plume, should they think fit. We want more competitors even than we have now.

The illustration "A Roadside Scene" is a snapshot taken by the Cytox Hand Camera, which we reproduce by the kindness of Messrs. Harris and Co., the manufacturers.

The Month.

SCREENS AND SENSITISERS.

HERREN HRUZA AND HAZURA give a series of diagrams of the absorption of certain colouring matters which will be useful for all interested in orthochromatic or heliochromic work, but which will not allow of condensation.—*Photogr. Corresp.*, July, p. 332.

PHOTO-CHEMISTRY OF VANADIUM AND ITS SALTS.

R. E. Liesegang gives the result of his experiments. An aqueous solution of ammonium vanadiate remains unchanged

after several hours' insolation; the addition of an equal quantity of formic acid gives a yellow solution, which becomes colourless in five minutes in sunlight and then turns blue. A mixture of lactic acid and ammonium vanadiate is less sensitive, as it only turns blue after an hour's exposure. By titration with potash permanganate, this could be used for the preparation of an actinometer. In the dark both solutions revert to their original colour. Filter paper soaked with ammonium vanadiate gives a faint blue positive on a yellow ground after several hours' exposure under a negative; the image can be intensified with nascent silver. On strongly sized paper the salt is quite insensitive, as are also mixtures with citric and oxalic acids and oleate of soda and potassium bromide; on the other hand, a mixture with sodium iodide gives a very intense blue after one hour's exposure. The following tabular statement gives the result of other mixtures:—

Ammonium vanadiate mixed with	Colour before and after exposure (two hours' sunshine).	
Uranyl citrate	bright yellow	slightly browned
Ferrocyanide of potash	yellow	blueish green
Chloroplatinite of potash	colourless	unchanged
Mercuric chloride	„	„
Ammonium sulphocyanide	„	reddish
Silver nitrate	faint browning	deep brown

Photo. Archiv., July 16th, p. 209.

Rapid Collodio-Bromide Plates.

M. David describes the following method of making these, and states that he has obtained a sensitiveness of 22 to 23 deg. W. A sheet of glass 18 by 24 cm. ($7\frac{1}{4}$ by $9\frac{1}{2}$) is coated with 25 c.cm. of collodion containing 18 grams of silver nitrate and 7 grams of pyroxylin per litre. When set, the plate is placed in—

Bromide of potassium	80—120 gram.
Iodide of potassium	0·01 „
Gelatine	2 „
Distilled water	1,000 c.cm.

Then the sensitiveness is obtained by allowing the plate to remain in the following:—

Potassium bromide	18—25 gram.
Gelatine	1 „
Distilled water	1,000 c.cm.

If this bath is maintained at a temperature of 70 to 75 deg., the sensitiveness will be obtained in two hours; if the temperature is increased to 90 to 95 deg., one hour is sufficient.—*Bull. Soc. Franc.*, July 1st, p. 306.

Rapid Developing for Reproductions.

Hupfauf recommends the following method of developing black and white work. The exposure should be correct, or preferably too long rather than too short. Commence development with the following freshly prepared:—

A.

Hot water	1000 parts.
Sodium sulphite	100 „
Metol	10 „

B.

Water	1000 parts.
Sodium carbonate	100 „

Mix in equal parts just before use and add ·1 per cent. of 10 per cent. solution of bromide. The image appears almost instantaneously, and as soon as the shadows begin to veil over, pour off the developer and apply the following developer:—

Stock Solution A.

Hot water	2,000 parts.
Sodium sulphite	300 „
Yellow prussiate of potash	125 „

When dissolved, add

Hydroquinone	80 „

Stock Solution B.

Water	1,800 parts.
Sodium carbonate	300 „
Potassium	50 „

For use mix

Solution A	100 parts.
Solution B	100 „
Water	100 - 150 „
Sol. brom. pot. 1 : 10	5—10 „

This will keep for several days. The more water the softer the negative; the less water the denser the negative.—*Photogr. Corresp.*, July, p. 334.

Notes on the Eikonogen Developer.

Lainer gives the following useful notes on the use of this developer and the action of different substances in it. Four parts of eikonogen have the same reducing power as 1 part of hydroquinone. Eikonogen cannot be kept in a stock solution, alkalies increase its solubility. The mixed developer has not great keeping power, and cannot therefore be used for a large number of plates in succession. Caustic alkalies alone generally give fogged negatives. Addition of bromide prevents the development of details in the shadows in a much greater degree than with hydroquinone. One drop of a 1 per cent. solution of tincture of iodine to every 200 parts of developer acts favourably on gradation and prevents hardness. Hyposulphite of soda acts as an accelerator. Glycerine in the proportion of 1 : 20 of developers acts as an antifogger without holding back shadow details, and keeps the solution longer. Yellow prussiate of potash has no striking action. Sodium sulphite and eikonogen alone will develop without alkalies; it imparts a good grey colour to the image, and by lessening the quantity of sulphite density and contrast are increased. Omission of sulphite gives brownish tones. Small quantities of the carbonate and caustic alkalies give long development and delicate negatives, increase of these produces more vigorous and harder negatives. Many plates give a yellow stain with this developer, which can be removed by bathing in ·1 per cent. hydrochloric acid and fixing in the acid fixing bath. With short exposures and long development red fog often appears.—*Photogr. Corresp.*, July, p. 326.

Platinotypes with Sepia Tones and Hot Development.

Lainer summarises his experiments on this subject. With an addition of 1 per cent. of mercuric chloride to the ordinary developer brownish black tones are obtained; increase of the mercury gives yellowish-brown prints. The oxalate solution should always be heated before the mercury is added, or else mercuric oxalate may separate out. A fresh developer should be used each time. A simpler method of obtaining sepia platinotypes is by adding the mercury to the sensitising solution as follows:—

Solution of chloro-platinite of potash	6 parts.
Normal iron solution	2·5 „
Chlorate iron	3 „
Solution mercuric chloride (1 : 3 to 1 : 14)	1·2 „

The after treatment of the prints is as usual. The prints can be toned with uranium according to Dr. Strakosch's formula.

Water	1,000 parts.
Uranyl nitrate	10 „
Potassium ferridcyanide	2 „
Glacial acetic acid	60 „

—*Photogr. Corresp.*, July, p. 324.

Heliochromic Projection.

Valenta gives a description of Vidal's method of producing heliochromic lantern slides, and states that for the preparation of the negatives the relative exposures are for the blue negative 1, for the yellow 3, for the red negative 60.—*Photogr. Corresp.*, July, p. 329.

A Novel Method of Retouching.

M. Vidal gives the following method of retouching (? ?, or

what we should call harmonising harsh negatives) :—Paint over all the dense portions of the negative with asphalt dissolved in benzine, then when dry the plate is dipped in aqueous solution of rosine, with chrysoidine or primuline. The operation may of course be repeated for different parts. Two striking examples are given.—*Photo Club de Paris*, July, p. 215.

ON THE COLOUR OF NEGATIVES.

Abney gives the results of measurement of several negatives in his colour apparatus, and gives table showing the amount of spectrum light transmitted by two negatives, which is interesting as an addition to our knowledge on the printing qualities of negatives.—*Photo Work*, July 14th, p. 334.

METOL FOR TRANSPARENCIES AND NEGATIVES FOR ENLARGING.

W. B. Bolton recommends Metol for above, on account of the excellent gradation and transparency of image. He suggests the following formulæ :—

A.	
Metol	120 gr.
Sodium sulphite	1,200 „
Water	20 oz.
B.	
Sodium carbonate	1,000 gr.
Potassium bromide	20 „
Water	20 oz.

For use, mix in equal parts, and dilute with from 1 to 2 parts water ; the more concentrated the solution gives greater density. For transparencies the bromide should be doubled, or the following one-solution developer may be used.

Metol	120 gr.
Sodium sulphite	1,200 „
Potassium bromide	40 „
Sodium carbonate	1,000 „
Water	20 oz.

Dissolve in above order, and dilute with from 1 to 3 parts of water.—*Brit. Journ. Phot.*, July 7th, p 74.

Flotsam and Jetsam.

WE dare not assert that the Duke and Duchess of York are amateur photographers. We have no authority for the statement, and this is not a society journal. But at least they have shared in an amusement which was noticed recently in this column for the benefit of all amateur photographers. That amusement was the perusal of the various wedding numbers published by the illustrated journals, and their comparison one with another.

THE London correspondent—what ubiquitous and omniscient people these London correspondents are !—of the *Western Daily Mercury* draws a quite idyllic picture of the Royal honeymoon at Sandringham, and says that the young couple have made a collection of wedding numbers. The "extraordinary anachronisms "—and the glaring contradictions, we may add—committed by many of the artists amused them immensely. Only "the faithful camera" told a true tale, apparently.

THIS should incline the hearts of the Duke and Duchess to photography. They would have found an additional pleasure in the camera, had they only tried it. Of course, it would have been of the stereoscopic type.

THE camera seems to have found its way very successfully into what "Jeames" would call "'igh life," for at the Goodwood House party last week many of the young princesses were busily engaged in taking snap shots of Ormonde, when he was exhibited to the Prince of Wales and his distinguished *entourage* at Goodwood House.

IN the paddock too a lady photographer—so, at least, Captain Coe reports—was eagerly, almost frantically, endeavouring to get a shot at Mrs. Langtry, but the fair actress knows a thing or two about photographers, and she would not give the poor lady a chance, however persistent and patiently she followed her. One can conceive that this sort of thing may become quite an annoyance if is carried too far. It would be a hard thing to see on a racecourse "Beware of snap-shotters !"

WILLIAM HOHENZOLLERN, the *fin de siecle* Emperor, has arrived at Cowes, and great are the festivities that are expected in the Solent. Rumour has it that his presents to English naval officers—for etiquette requires that Royalty shall scatter gifts wherever it goes—are all ready, and have taken the shape of photographs of his imperial self in the uniform of a British Admiral, mounted in valuable frames of artistic design.

THE Emperor is never above taking a hint. Why should he not become a disciple of the camera himself, and give away his own work when it is necessary to make presents ? Think of the supreme excellence that would be certain to characterise all his work !

HERE are two instances of the varied powers of photography, culled, the one from an account of Sunday morning in the Solent, and the other from a scientific paper. Among the scores of boats of all sorts and sizes, whose white sails made gay the rippling waters, there ran a fast yawl, on board of which was a photographer, busily engaged with a detective camera in getting instantaneous photographs of the *Meteor* and other famous yachts.

QUICK work it must have been, and pleasant, too, and the results should be just as pleasing, for there are few prettier pictures than that of a gracefully-rigged boat bowling along in full career. The point of view, too, from the deck of another boat should give exceptionally fine prints.

VERY ingenious is the other application of "light-writing." It is a device for recording on paper a continuous reading of station voltmeters. An incandescent lamp is so placed as to throw a strong ray of light upon a narrow opening, in front of which the registering needle of the voltmeter is placed. This needle, of course, intercepts the light, and throws a shadow, each time it crosses the opening. The shadows fall on a sheet of sensitised paper which is moved behind the opening at a regular rate, and so they are recorded, the intervals of time being indicated by the interstices between the images on the paper.

ANCHORITE.

Rivalry and Co-operation.

BY A. HORSLEY-HINTON.

BY this time probably most of us have received the printed announcements and entry forms of the two photographic exhibitions which together and between them will surely gather in for public exhibition all the best of the year's photographic work. I mean, of course, the Photographic Society of Great Britain and the Photographic Salon. By this time, moreover, many of my readers are busily occupied in preparing work for one or for both exhibitions, and some few reflective remarks upon the entire subject of the two shows may not be out of place and interest ; and if apology be needed for essaying such remarks or justification on the writer's part, it is that I claim for myself an unprejudiced mind in this, a matter somewhat fraught with contentions, views, and suggestions of rivalry and antagonism, having quarrelled with no one, as some are said to have done, and I would wish to review the situation without

any suggestion of partisanship. Two exhibitions in London, each with considerable claims to importance, contemporaneous and nearly adjacent, cannot but be regarded as a noteworthy event, and can hardly escape being attended with definite results to which even the photographer least concerned in the development of photographic politics can hardly remain indifferent.

Months ago it came to the ears of most photographers—as most things do which are never meant to be known—by gossip and through the Press, that a new exhibition was about to be organised, and further rumours had it that this exhibition was the outcome of a union of photographers not altogether unknown amongst us, who were spoken of as dissentients—photographers who had grown dissatisfied with the existing order of things—iconoclasts who had scoffed at and broken down time-honoured canons of respectable photography—revolutionaries and "malcontents" who were presumptuous enough to assert an independence, and for whom a National Society and a Camera Club were insufficient, and they must needs have their own private assemblies, and forsooth a big exhibition. So said gossip, and the Press paragraphs made as much as possible of the very scanty information which came to hand, and so when in the fulness of time an exhibition circular and "application form" of the conventional type was issued from a source which some might term suspicious, of course everyone knew all about it—or thought they did. Here was an open and flagrant attempt to injure the old-established annual show so long known as the Pall Mall Exhibition—here was opposition and rivalry which could only end in failure, a deliberate though long-delayed blow from those who had previously had some personal differences with "the society," but who, it was admitted, had certainly secured the alliance of a very strong and representative group of photographers.

Well, when a section of the community gets an idea into its head it is hard to shift it, especially if the notion be one which lends itself to some argumentation and serves as a medium for airing personal feeling, for deriding those it is unable to destroy, and for making useful friendships by mere partisanism.

And so in the case of the projected Photographic Salon; gossip-mongers, mischief makers, and those with personal interests at stake had done their best to foredoom the Salon to ignominious failure, but, judging as one safely may from facts to hand and abundant signs, the impotence of such persons is amply shown by their small measure of success. There is every reason to believe that the Salon will accomplish all that it is intended to.

And now as to the older institution—the Photographic Society—what of its exhibition? I for one know not why the question need be asked, but that it is just now customary to compare the two events.

There can be no reason to suppose that the one exhibition will affect the other in any way, except that, being held at about the same time and the same locality, the world in general will be more strongly appealed to, and it were safe to prophesy that photography will be immensely benefited by the additional outlet for good work, and by the more varied censorship of different bodies of jurors.

The Photographic Society of Great Britain and its Exhibition will still be what it always has been—the not too efficient national body. As compared with other societies, a fellowship or membership of which is in many cases an honour attainable only by those who have distinguished themselves, the P.S.G.B. is far behind what it should be (it has not even the exclusiveness which may be accomplished by a big subscription and entrance fee); still, it is the Society of Great Britain, and as such will, together with its Annual Exhibition, always possess the prestige which age and title may secure. And why not? Can it be supposed that because certain enthusiasts think fit to organise a new exhibition injury to what we know as the "Parent Society" can be intended? Has the Society nothing but its exhibition to base its dignity upon? The very nature of the Salon Exhibition prevents its being antagonistic to any other existing exhibition, and certainly does not trespass upon the field of normal society work.

For a moment let us see how this is. Long ago past it must have been felt that photography as now practised and as now known was getting too great for the hitherto recognised channels. Whatever justification there might be for the purely artistic claims of photography, it must have been felt that there is at least just sufficient in these claims to make some provision for their furtherance desirable, and the persistence of the chief apostles of artistic photography was undeniable, and such provision became imperative.

At exhibitions distinctions began to be made between "art" sections, and "scientific and technical;" in competitions and prize-givings too, technical excellence was spoken of as not the only thing to be aimed at; and, growing stronger still and receiving encouragement as well as contempt from the world, is it surprising that some have felt the time ripe for an exhibition of work the aims of which are artistic chiefly or only? And for the cultivation of the artistic in photography, or that which claims to be artistic, is it desirable that it should be hung and publicly shown side by side, surmounted and confronted by photographs the sole purpose of which is perhaps to exemplify some new optical achievement or to display the wonderful possibilities of the whole craft of photography?

The demands of photography to be considered as an art are too serious to be ignored—are just sufficiently well founded, perhaps, to deserve careful attention and examination before being dismissed; and this being so, a separate opportunity for the display and exhibition of such works is essential, an exhibition which may appeal to many of an intelligent class who, not being concerned in any way with photography in all its devious aspects, may judge from an independent standpoint and determine their success or failure as pictures only, not purely as photographs. This brings us to what will perhaps be one of the chief functions of the Salon. How many are there outside the partieular photographic circle who know anything of the troubles and disputes which have ruffled the surface of things photographic latterly? How many persons are there besides my readers and their friends who are aware even of the existence of a Photographic Society, or even the photographic press? To the outside world what are the agitations between "sharpists" and "impressionists"? Think for a moment of the thousands of intelligent men and women who know how to appreciate a work, a picture which shows good taste and feeling, but who know nothing of the photographic sphere, and know not what photography can do beyond the "views of the neighbourhood," purchased on a holiday tour, or the highly embellished portraits of family and friends.

It is to these that the Salon will appeal, and being new and unassociated with any society or club will have a better chance of attracting.

Now, if the Photographic Society can but prove itself worthy and take its position amongst the contemporary learned societies, what more need be wished? And year by year let it have its annual Conversazione and Exhibition, when all the newest advances in the many-sided science may be shown and discussed. But if from amongst its many methods some few men of artistic leanings adopt such as appear particularly suited for picture-making and decide to hold an exhibition, and to invite others who, it may be, are working obscurely, to come out from their seclusion and contribute fresh work and fresh ideas, who shall say them nay, or who has a right to point to such as seeking to create dissensions?

The "two sides of photography" have been gradually diverging until each is becoming distinct, and it is time that each had its separate home.

If we attempt to trace the departure to its source we shall probably not get much further back than to the not very remote date when "Naturalism" and "Impressionism" were first spoken of freely in connection with photography. True, there was much imbecile imitation, and a use of certain materials and an adoption of certain methods that made many loathe the very name of "Naturalism" so misapplied, so prostituted; and yet, underneath, the unbiassed might have seen in the aggregate a movement which has now grown to formidable proportions and assumed a dignity deserving of respect.

Now, for some time past it has been generally recognised that exhibitions of photography are becoming too numerous, and further that there is crying need for reformation in the usual regulations which control them. It has been felt that some rules are needed for the guidance of judges, and also that the question of classes and awards, their number, character, and distribution, needs to be seriously considered by those whose experience and good judgment may qualify them to decide what is best for the entire community.

On all similar occasions it is the extreme party who bring about revolutionary good. It may be said that salutary change is a sort of settling down or toning down after disruption. A generally accepted order of things goes on for a long time until some few outgrow the conventional and step beyond; then feelings are hurt, privileges are violated, and independence asserted, and strong reaction sets in, going perhaps to extremes which are hardly desirable. I will not say that this is the case with the Salon, but the rules which it has set up are of the most revolutionary character—no classes, no awards, no entrance fee—a courageous experiment which seems very sure of success; and one feels tempted to ask, has this departure had no effect already upon the actions of the old society, or is it a contemporaneous endeavour to meet more recent and advanced feelings that has brought about the new clause whereby the judges *select* the works before hanging? There is perhaps more meaning in this than some of us know.

And again, to revert to the monstrous suggestion of rivalry and antagonism, surely it is strange that of the five judges who are announced for the Photographic Society's Exhibition, *four of them are amongst the names of the promoters and originators of the Salon.*

Let us abolish as unworthy and uncalled for any idea that the two exhibitions of the coming autumn are opposed, though their objects may be widely different, and let the twofold interest of photography be admitted, and let each side find a fitting home respectively, and by this means the two exhibitions may co-operate and work with equanimity.

Comparisons are best avoided, yet one cannot help thinking of the newer picture galleries which have sprung up of late years, largely originating from a feeling that the older and eminently respectable Royal Academy was insufficient for modern developments. But is the R.A. the worse for these newer galleries, or would they be benefited by its extinction? The function of each, though similar, is yet different. And so, with our Pall Mall and Piccadilly shows of photography this autumn, and let us hope in many future autumns, we may reasonably reckon there will be room for both, and in their mutual prosperity past dissensions will be forgotten, and not rivalry, but co-operation, will make each useful for the furtherance of the best interests of photography.

Great Yarmouth.

GREAT YARMOUTH, with its ever-changing beach life, offers in the first place an excellent field for hand-camera work, and its close proximity to the rivers and broads of Norfolk and Suffolk makes it a capital centre from which the artistic amateur may radiate at the dictates of his own sweet will. It is easily accessible from all the large towns in England, its principal stations being South Town and Vauxhall (Great Eastern), and Yarmouth Beach (Eastern and Midlands).

Supposing you arrive by the train from London, you get out at South Town, cross the River Yare (along the banks of which there are plenty of pictures to be obtained), and immediately facing you are a number of the extremely narrow old-fashioned courts called Rows, for which Yarmouth is celebrated. Indeed, the renown of these narrow alleys has spread almost as far as that of the famous Yarmouth bloater. These "rows" make interesting pictures. No. 57 Row is doubly interesting, as it contains the house in which formerly lived Sarah Martin, the history of whose life is one of the traditions of Yarmouth, she having devoted herself to the teaching of religion to the inhabitants of the gaol. The only portions of the gaol remaining are the dungeons underneath the old Toll House, which is now utilised as the public library. Passing along to the left of this "row" you come to the market-place. Here a plate or two will not be mis-spent.

Across Church Plain brings you to St. Nicholas Church, said to be the largest but one in England. The interior contains several ancient tombs and stained-glass windows, one of the latter having been erected in 1848 in memory of the aforesaid Sarah Martin while the pulpit itself is a splendid piece of carving. Permission to photograph can be obtained from the vicar or any of the churchwardens. The exterior can be taken from various points, to suit one's fancy.

Past the church is an old Roman road named Caister Road leading to the village of Caister, a suburb of Yarmouth. The ruins of Caister Castle may be seen and photographed on payment of threepence to the custodian. Whilst at Caister it would be as well to go on to Ormesby Broad, one of the prettiest of the Norfolk Broads. After exploring this spot a sharp walk brings you to Great Ormesby Station, and a short train ride lands you at Yarmouth Beach Station. The beach consists of splendid silver sand, dotted here and there with bathing machines, yachts, fishing smacks, and pleasure boats, whilst anchored out at sea in the Yarmouth Roads are to be seen boats and yachts of every description. The professional "just as you are for ninepence, frame and all complete," literally abounds here, and is always anxious to give the amateur advice about the light, what to photograph, etc. He himself is sometimes hard put to earn a respectable livelihood, and has to resort to numerous dodges in order to attract the moneyed public. A novelty to be seen at Yarmouth is a canvas life-size reproduction of "You Dirty Boy" of soap fame; the features are cut out, leaving two open spaces; the subjects for portraiture stand behind, and placing their own heads in the open spaces, are thus photographed. The resulting picture is comical and well worth the shilling charged for it.

Yarmouth boasts of two piers, viz., the Wellington and the Britannia, and also a jetty. A view of the drive from the Britannia, with the beach in the foreground, may perhaps be considered worth taking. The charge for admission to the piers is twopence, and no objection is taken to the camera being used, as is often found to be the case at some of our other seaside watering-places.

The visitor may also feel inclined to secure a picture of the jetty from the road, for the two old cannons in front give it a martial appearance.

A mile walk by the sea-shore in the direction of the North Denes, and you approach Gorleston Harbour, and cross the river Yare by means of the ferry to the fishing village of Gorleston. Here you have the Gorleston lighthouse and cliffs, and in the distance can be seen Lowestoft. The tramway runs from Gorleston village to Yarmouth South Town, which is a convenient way of returning.

A quarter of an hour's ride from South Town station takes you to St. Olaves for the Fritton Lakes and its celebrated Decoy, a charge of threepence being made to all visitors. Another quarter of an hour's ride further on the same branch line, and you reach Oulton Broad, famous for its fresh-water fisheries. Here boats abound, and can be hired very cheaply. Lowestoft is the next station to Oulton Broad, but it is in itself of so much importance, with its fish markets, harbour, pier, park, and lighthouses, that it should form the subject of a paper alone, and be dealt with separately. Suffice it to say that all amateurs who have the time after doing Yarmouth should not miss Lowestoft.

Steamboats ply at regular intervals between Yarmouth, Norwich, and Wroxham, and the amateur should certainly avail himself of the opportunities afforded by a trip on one of these vessels, for at Norwich and Wroxham he will find plenty of material for the exercise of his photographic skill.

It will, of course, be understood that all the places above mentioned cannot very well be explored in a single day, but they will form the subject of various pleasant excursions, and several days can be profitably spent with the camera in and around Yarmouth.

Dark-Room at Dolgelly.—Mr. H. Morris, chemist, Bridge Street, Dolgelly, informs us that he now stocks Ilford plates, and chemicals.

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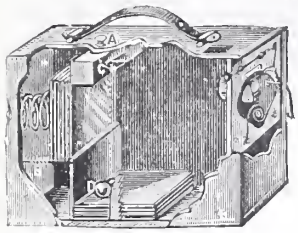
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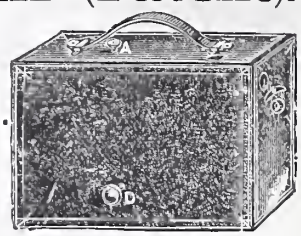
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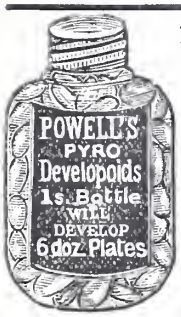
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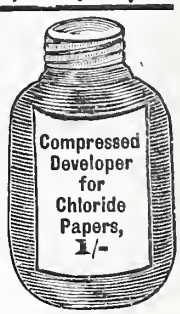
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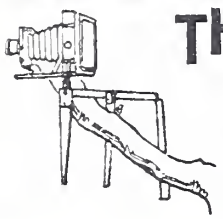
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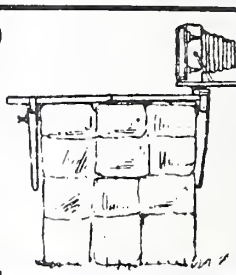


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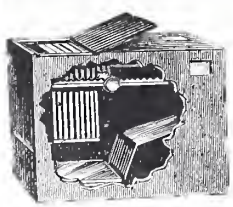
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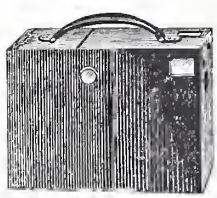
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THE UNO CAMERA CO., 46, Southampton Buildings, Holborn, London.

MONTHLY PRINT COMPETITION.

NO. 50.—LANDSCAPE.

CLASS I.

KAUFFMANN, J. (Zurich).—"A Bit on the Lake of Thun."—French R.R., *f*/32; 6 sec., March, good light, 10.15; Ilford Iso. ordinary; home salted and sensitised paper; bicarbonate of soda and gold. "A yellow screen was used when taking this picture." This is a charming little bit, and the vignetting adds considerably to the effect by breaking the straight lines of the mountains.

MORGAN, H. G. (Herefordshire).—"Near Penmaenpool." Wray's R.R., *f*/16; 1 sec., June, dull, about 3 p.m.; Paget's Phœnix; platinotype cold bath. "Taken in the rain." A difficult subject, and excellently treated, and the printing is just suited to the picture.

NICHOLLS, A. C. (Cheltenham).—"Hoar Frost and Mist." Taylor, Taylor and Hobson's R.R., *f*/32; 5 sec., December, diffused light, 12 o'clock; Paget Phœnix; cold-bath platinotype. "The air was full of mist, which turned into a thick rain within a few moments after exposure." Another delicate, soft result, but might have been improved by the omission of the central figure, which is quite superfluous.

FORMAN, E. H. (Lincolnshire). — "Lake Crafnant, N. Wales." Single landscape, *f*/32; 2 sec, June, light good, 11 o'clock; Castle plate; Mezzotype paper. Although the judges have placed this photograph in the first class, we are not sure that it deserves that honour, for it entirely lacks originality of composition, being the point of view selected in all the commercial photographs, as, indeed, would be at once obvious to anyone familiar with the locality.

ROBBINS, R. C. (Cheshire). — "Pandy Village." Pausodonoptic R.R., *f*/22; 6 sec., May, light good, 2.30 p.m.; Edwards' landscape; Ilford P.O.P., sulphocyanide. Another view in a much-photographed locality, but here the competitor deserves all praise, for he has avoided trenching upon the well-trodden ground of Pandy Mill, and has given us a very charming original and artistic picture of the village of Pandy. The general technique is excellent, and the colour of the print good.

BASSANO, C. W. (Staffordshire).—"At the Plough." Ross' R.S., *f*/16; a quarter of a second, June, light fair, 4 p.m.; Castle; Ilford P.O.P., soda, bicarbonate and gold. "Clouds from a negative taken earlier in the year." This picture is ambitious, but the effect is spoilt by the very conscious attitude of the man and boy. Moreover, the fact of the sky having been printed *over* the distance, has destroyed to some extent the feeling of atmosphere and perspective. The print is too purple in tone to please our tastes.

SNOWBALL, G. S. (Newcastle-on-Tyne).—"On-Road to Gelt Woods." French R.R., *f*/16; 2 sec., May, sunshine, 1 o'clock; Castle, backed; P.O.P. "Clouds are printed in, negative untouched." The colour of this print, also, leaves something to be desired, and is not suitable for a landscape. Otherwise the technique is good, though the placing of the two figures in the middle of the picture detracts from its merits pictorially. People are not in the habit of taking a country walk in their shirt-sleeves and minus coat and waistcoat.

SANDERSON, F. H. (Cambridge).—"The Derwent." R.R., 8 in. focus, *f*/32; 3 sec., June, soft sunlight, about 4.30; Climax; Solio platinum-toned matt. A very fine photograph, and one that does its producer great credit, albeit the subject is somewhat topographical. The colour, a cool sepia, is extremely pleasing, and we wish that many of our competitors could see it, in order that they might compare it with the purple prints contributed by themselves.

BETHELL, LUCY (Tadcaster).—"View near Banff, Rocky Mountains." R.R. Dallmeyer; May, light very soft and nice, 5 o'clock Edwards' film; P.O.P., sulphocyanide. One of the most charming silver prints it has ever been our good fortune to see. The effect of the atmosphere is rendered in a manner seldom met with in a photograph. The various planes in the picture stand out with an effect almost stereoscopic. We had no voice in the judging, so are unable to explain how it came about that the picture did not meet with approval. We hope Miss Bethell will not be discouraged thereby, but will again compete.



No. 1.] "On the Lake of Thun." [*J. Kauffmann.*
SILVER MEDAL.

CLASS II.

BRYANT, G. E. (Manchester).—"A Glimpse of Haddon." Laverne $7\frac{1}{2} \times 5$, *f*/10; 1 sec., May, sunlight, a few light clouds, 2.30; Ilford ordinary; Eastman's Solio paper, platinum. A very good photograph, showing original treatment of a well-known subject. The composition is good and the only fault that can be found is an undue heaviness in the shadows, which a trifle more exposure would have remedied. It is, however, a mistake artistically to mount a smooth-surface print upon a rough Whatman plate-sunk mount.

WATSON, MARGARET (Florence).—"The Ruined Church." Lancaster's Combination, 20; 3 sec., May, 9.15; Ilford isochromatic medium; platinotype. The absence of clouds, and the large expanse of white sky, has a distressing effect upon the eye, otherwise the photograph is a good one.

BUCKLEY, J. W. (Stockport).—"Landscape." Ilford ordinary *f*/32; 15 sec., dull light; pyro soda developer; P.O.P. white, sulphocyanide in bath; clouds inserted. Very good technically, though a little too low in tone. Would have been improved artistically by pointing the camera a little more to the left, so as to omit the protruding branches of the tree on the right, an error into which photographers very frequently fall, but one which a painter never commits.

MENCARINI, JUAN (China).—"A Packling View." Perken, Son and Rayment's R.R., *f*/16; 1 sec., May, sunny, 11 a.m.; Ilford, whole, white label; Ilford P.O.P., gold sulpho-cyanide. A carefully-printed gelatino-chloride print, showing careful work. The foliage, however, lacks contrast. We think a better rendering of this subject

would be obtained with an isochromatic plate. Try again, M. Mencarini.

MARTIN, H. B. (Liverpool).—"Chain Bridge, near Llangollen." Taylor, Taylor and Hobson, *f*/32; 2 sec., July, good light, 4 p.m.; Ilford ordinary; Ilford P.O.P., sulpho-cyanide of ammonia. A pretty little quarter-plate picture. The sky, however, is a little too heavily printed.

SMITH, H. S. — "Knaresboro." Beck's R.R., *f*/45; 2 seconds, good diffused light, July; Paget's xxxxx.; rough platinotype, cold process. This picture lacks interest—a dreadful criticism when it is remembered that the district in which it was taken abounds in beautiful subjects. Moreover the whites are slightly yellowed, showing that traces of iron remain in the paper; another clearing bath would remedy the defect.

HOOPER, H. A. (Gateshead).—"Spring Time." Ross' R.R. half-plate, smallest; 10 sec., bright sun. 2.30 p.m.; Ilford Iso.; Mezzotype. An artistically treated picture, which, however, would have been improved by placing the church a little less centrally upon the plate. There is, moreover, no necessity for the use of such small stops in landscape work, the practice tending to produce flatness and loss of breadth.

ROSCOW, J. S. (Bolton).—"Lledr Valley." R.R., 32; 1 sec., August, good light, 4.20; Castle; Solio. The line of hedge in the foreground should have been trimmed off, and the view taken when the sun was not quite so much in front of the camera. The blank white sky does not add to the effect.

ARMBRECHT, E. L. (London).—"Almshouse near Canterbury." Stereo Co. "Black Band" R.R., *f*/35; 2 sec., June, weak sunshine, 4 p.m.; Ilford ordinary, Eastman's bromide. A good technical photograph; had a sky been introduced the result would have been improved from a pictorial point of view.

BASSANO, FRANCIS (Derby).—"Markeaton, near Derby." Ross' symmetrical, *f*/20; 2 sec., September, soft sunlight, 2 p.m.; Ilford Ordinary; Ilford P.O.P. This photograph has been carelessly focussed, the distance being sharp and the foreground more or less out of focus. The highly glazed surface is not suitable for landscape subjects.



No. 2.] "Near Penmaenpool." *[H. G. Morgan.*
(BRONZE MEDAL.)

WILLIS, MISS (Brighton).—"Prince Charlie's Monument, Loch Shiel." Stereoscopic Company's Black Band R.R.; *f*/32, 5 sec., October, still sunny day, 1.30 p.m.; Fry's 30; Ilford P.O.P. A capital photograph of an unconventional subject. We often wonder why photographers so much neglect the "Emerald Isle." We shall look to see more of Miss Willis's work in Ireland.

ELLAM, J. E. (Yarm).—"Runswick Bay." Zeiss; *f*/25, 3 sec., April, good light, 2.30 p.m.; Fitch's film; platinotype, cold bath. The shadows in this picture are too heavy, due either to under-exposure of the negative or over-exposure of the paper. Subjects showing heavy shadows require full exposure, particularly when taken in strong sunlight.

FOSTER, ISABELLA (Chislehurst).—"The Ribble, Yorkshire." Beck's Autograph rapid rectilinear; *f*/11, 1 sec., August, sun and clouds, 11 o'clock; Mawson's Castle; platinotype, hot-bath process. This lady tells us clouds were present when she made the exposure; had she endeavoured to secure them her photograph would have been greatly improved; as it is, the picture suffers from the large expanse of white blank sky.

LITMAN, J. T. (Linc.).—"A Foggy Day." Lancaster's Instanto; *f*/22, 8 sec., December, dull light, 2.45 p.m.; Ilford Ordinary, pyro-soda; Simplex paper. A pleasing picture, well conveying the impression of winter. Pictorially a little attention to the arrangement of the figures would have improved the result. The man and the woman in the middle distance are superfluous and should have been omitted.

PEARSON, H. C. (Brazil).—"Amorim." Lancaster's R.R.; *f*/45 10 sec., November, bright sunlight, 1 p.m.; Ilford Ordinary, 10 by 8; albumen, home-sensitised and fumed; gold, borax, acetate, soda and bi-carbonate soda. By mounting the print upon very rough Whatman this competitor has produced a silver print with a rough grain, a tip which may be useful to some of our readers. The picture is evidence of careful work, and a curious mottled sky has been skilfully printed in.

PEARCE, N. S. F. (Cambridge).—"Fields near Home." R.R., *f*/20, 4 sec., February, sunlight, 12 noon; Imperial extra-rapid; Ilford P.O.P., matt-surface. In this photograph we have evidence of considerable artistic perception in its producer, the introduction of the figure making a very ordinary landscape an interesting picture. In future prints, however, the tree trunk on the right should be trimmed off.

DAVIS, J. S. C. (India).—"In the Lower Himalayas." R.R. (half-plate Shaw's Eclipse); *f*/40, 15 sec., June, sun and clouds, 4.30 p.m. Edwards' medium iso. film; platinotype cold-bath, oxalate potassium. This print is welcome in that it comes from a reader residing in a distant clime. Although an isochromatic plate was used the distant mountains are almost obliterated. The use of a pale screen would be an advantage in this class of subject.

MORELAND, J. C. (Belfast).—"Is that a Hawk?" Optimus R.R., half-plate; *f*/22, 4 sec., June, sunlight, afternoon; Ilford Ordinary; Solio. A good subject, but the print is unevenly toned and the colour is rather foxy. Very few people seem to master the difficulty of toning P.O.P. paper with platinum.

GREEN, A. W. (Kent).—"Totteridge Common." 7 by 5 Optimus R.R.; *f*/16, cap off and on, August, good light, mid-day; Ilford iso.; bromide; clouds from separate negative. A pretty little print in bromide, rather yellowed by a too sparing use of the clearing bath.

DAVIS, G. H. (Jersey).—"Early Eve in a Vale." 7½ in. R.R.; *f*/16, 3 sec., June, good, full sun, no clouds, 6.30 p.m.; Ilford iso.; medium; P.O.P. A charming photograph, which only just missed the first class.

POLLARD, SEPTIMUS (South Shields).—"On the Tees." Optimus Euryscope, *f*/32; 6 sec., May, good light, 6 p.m.; Ilford ordinary; Eastman bromide. In this picture the clouds have apparently been "manufactured," *i.e.*, painted upon the back of the negative; the result does not tend to enhance the pictorial qualities of the picture.

TUCKER, C. H. P. (Barnstaple).—"The Woodman's Cottage." Ross's wide-angle landscape, *f*/16; about 2 sec., May, fairly bright, sun out occasionally, 1.45 p.m.; Paget prize plate; Obernetter paper. In this photograph the principal object, the cottage, is too near the middle of the picture.

LIVESEY, F. (Blackburn).—"In the Valley, Hurst Green." R.R., *f*/44; 2 sec., June, bright sunshine, 2.30 o'clock; Ilford ordinary; Ilford P.O.P. A gelatino-chloride print, in which the whites are rather yellowed, toned to a cold purple. Composition effective.

BERRY, A. R. (London).—"Littleham Village, South Devon." Wide-angle Optimus, *f*/22; 4 sec., May, very dull light, 10.15 a.m.; Castle; platinotype cold bath. Weather very dull, inclined to rain. Very dark foliage, probably due to the absence of light. Picture would be improved by the introduction of a suitable sky.

NORTON, J. W. P. (Sheffield).—"In the Rivelin Valley, near Sheffield." Optimus R.R., *f*/32; 3 sec., July, sun, 12 noon; Ilford ordinary; P.O.P.; sulpho-cyanide of ammonium. A bright, pleasing-toned silver print, in which the texture of the rock in the foreground is capitally rendered. Would look even better with a matt surface.

CUNHA, C. J. DA (Edinburgh).—"Cockburn Glen, Bridge of Allan, Scotland." Taylor, Taylor, and Hobson's R.R., *f*/22; about

4 sec., April, fairly bright, 1.20 p.m.; Paget's xxx. half-plate; Solio. This photograph has a spotty appearance, due to the multitude of scattered lights. Subjects of this character are always better rendered when taken on a dullish day.

SANDERSON, J. (Durham).—"Knaresboro, from the Surprise." Optimus Rapid Euryscope, *f*/32; ½ sec., September, sunlight, 9.50 a.m.; the Castle; Eastman's Solio. The clouds that are noticeable on the print are natural ones. A well-known view of a somewhat topographical character. The print lacks brilliancy, although the negative was evidently taken in sunshine. A better result would probably be obtained in platinum.

LEWIS, A. (London).—"Near Bank End Farm, Ventnor." Optimus R.R., *f*/16; 1-30th sec., Thornton-Pickard shutter; May, brilliant light, 11 a.m.; Thomas's E.K.; Mezzotype, medium rough. Foliage heavy, dark, and lacking in detail, due to under-exposure. Such subjects cannot be properly rendered with such brief exposures.

GROOME, R. S. (Acton).—"A Hampshire Cottage." Taylor's R.R., 9 in., *f*/22; 4 sec., September, dull, rain coming on, high wind, 11.30 a.m.; Ilford ordinary; Ilford P.O.P. A hard, crude print from an under-exposed and over-developed negative.

RODWELL, F. W. (London).—"A Rustic Cottage." Wray's R.R., *f*/16; 6 sec., bright sunshine, about 4 p.m.; Edwards' medium Iso.; platinotype cold bath. Neither negative nor print retouched. Negative developed with hydroquinone. A good techinal print of a somewhat uninteresting subject.

GROVES, R. S. A. (Dorset).—"White Cliff Mill, Blandford." Watson, *f*/16; about ½ sec., June, bright sunlight, noon; Ilford rapid P.O.P. A pleasing landscape, slightly under-exposed, and rather too warm in tone. Technique good.

PRICE, H. G. H. (London). — "Shonk's Mill, Navestock." Lancaster's instantaneous, *f*/20; 1 sec., July, sun shining, 4.30 p.m.; Ilford Iso. medium; Ilford P.O.P. A pretty quarter-plate study; would have looked better with a matt surface.

SOLTAU-SYMONS, G. (Plympton). — "Cattle Study." Wratten's instantaneous; 1 sec., April, 10 a.m., light, bright sun; Solio paper. We recognise this as the work of a former competitor, but we regret to say he has retrogressed rather than advanced. The picture is well composed, and the grouping of the cattle is effective, but the general technique is bad, the print being evidently produced from a hard, dense negative, lacking in half-tone. Probably if it were reduced, and the platinum process substituted for silver, a better result might be obtained.

STOCKDALE, R. (Leeds).—"Clapham, Yorkshire." Ross' R.R., *f*/32; 8 sec., April, dull sunshine, 10.30 a.m.; Ilford ordinary; Ilford gel.-chlor. A pleasing village scene, in which the gradation is well rendered; careful technique.

BROWN, A. (London).—"Pandy Mill Cottage." Eureka R.R., *f*/16; 1½ sec., March, diffused light, 4.15 p.m.; Ilford ordinary, Ilford P.O.P. A well-known spot to Welsh tourists. Pictorially the composition is marred by the figure standing in the middle; the camera, too, has been slightly tilted. By a curious coincidence one of the pictures in the first class is another and (we may add) much better view of the same subject.

FOWKES, J. (Sheffield).—"View in Endcliffe Woods, Sheffield." Lancaster's quarter-plate Instanto., *f*/1E; half sec., June, diffused light, 5 p.m.; Ilford Iso. ordinary, Ilford P.O.P. A rather over-printed chloride print, on a very ornate cut-out mount.

CURLE, MISS (Melrose).—"A December Day." Dallmeyer's R.R., 100; less than a second, December, dull light, 1 p.m.; Paget xxxxx; platinotype cold bath. A very fair rendering of a winter scene; the introduction of a cart or waggon would have been helpful by breaking up the wide expanse of road in the foreground.

SHEPPARD, MISS (London).—"In the Leafy Month of June." Medium; 3 sec., June, bright sunshine, mid-day; Ilford extra rapid, Eastman's Solio, Fallowfield's combined toning and fixing. Taken by a hand-camera, French make. This photograph is spoilt by the girl on the left staring into the camera; had she been kneeling down apparently engaged in picking wild flowers at the feet of the second figure a very pretty picture would have resulted.

THOMPSON, EDITH (St. Annes-on-Sea).—"Swiss Cottage, Grindelwald." Lancaster's Rectigraph, *f*/32; 3 sec., August, bright light, 5.15 p.m.; Ilford; Ilford P.O.P. A typical Swiss scene; would have been improved by showing a little more foreground. This could have been done by taking the view a little further back, or by using a lens of shorter focus. The mountains are beautifully rendered.

EYRE, H. S. W. (Crowboro, Sussex).—"Eventide." Ross concentric *f*/16; 3 sec. This picture is spoilt by the heavy, uninteresting foreground. We find, however, by cutting about an inch off a very great improvement is effected, and a very charming picture results. Test the effect of this, Mr. Eyre; print the picture upon rough paper, and try your luck again.

ROSCOW, E. J. (Bolton).—"Old Mill, Beddgelert." R.R. lens, *f*/32 (Castle); Solio paper. A very good photograph of a spot perhaps as much photographed as any in Wales. This print, also, would be improved by cutting away some of the foreground.



No. 3.] "Hoar Frost and Mist." [*A. C. Nicholls.*
(CERTIFICATE.)

CLASS III.

MARSTON, A. R. (Birmingham).—"Landscape in one of the Suburbs of Birmingham." Lancaster's Rectigraph, *f*/2; 1 sec., July, good light, 3 o'clock; Ilford ordinary; Ilford P.O.P. A bright-looking picture marred by the figure standing nearly in the centre. Evenly toned to a good purple.

GEE, F. (Liverpool). —"Berwyn, near Llangollen." Zeiss's Anast., *f*/16; 1 sec., April, sunlight, 3.30 p.m.; Ilford iso., medium; mezzotype. A heavy-looking print from an under-exposed negative. Continue development longer, and give more exposure.

BLEACH, F. (London). —"An April Evening." French R.R., *f*/16; 2 sec., April, sun through the rising mist, 6 p.m.; Edwards inst.; iso. film; P.O.P. Ilford. Too dark even for an evening effect. Evening effects are generally better rendered by a matt-surface process. The print is carefully printed and toned.

MAXWELL, J. P. (London).—"An Avenue." R.R., Morley and Cooper, *f*/64; 3 min., April, good light, noon; thickly-coated landscape Thomas's; mezzotype; nitric acid and potassium chloroplatinite. "The day was a little hazy. The negative was developed with hydroquinone." Subjects such as these seldom make satisfactory photographs, and this one, although technically good, is no exception. One avenue of trees in a photograph looks precisely like another.

SCUTT, G. P. S. (Swanage).—"Rustic Life." Holborn R.R., *f*/11; inst., June, bright sunlight, 8.30 a.m.; Paget xxxxx.; Paget P.O.P.; sulpho-cyanide and gold. "Taken with Shuttle hand-camera held in hand." A capital hand-camera shot. Fully exposed and carefully printed, toned, and mounted.

KELSEY, HAROLD (Yorks).—"A North Riding Village." Underwood's single lens, *f*/22; 6 sec., March, bright light, 4.30 p.m.; Imperial ordinary; Solio paper; Eastman's combined bath. The principal object in this photograph is the lamp-post, which occupies the centre of the picture.

—— (Highgate).—"A View in a Wood." Wray's R.R., *f*/22; 2 sec., April, very good light, 3.55 p.m.; Barnet ordinary; Solio. A fair silver print; would have borne a little deeper printing.

REYNOLDS, B. (Dulwich).—"A Grove of Fir Trees, Sussex." Lancaster's instanto., *f*/16; about 4 sec., August, sunshine, about

2.30 p.m.; Ilford ordinary; P.O.P. A difficult subject to give a satisfactory rendering of by means of photography. About an inch off the foreground would have improved matters.

Gordon, R. F. (Surrey).—"View of Aldershot and Cavalry Barracks from Hungary Hill." View lens, *f*/8; 30 sec., dull light, 4.30 p.m.; half-plate Ilford ordinary; sensitised paper, borax bath. A flat-looking silver print. A better result might have been obtained with an isochromatic plate and a pale yellow screen. Badly trimmed and mounted.

Gray, J. (Glasgow).—"The Old Mill." Taylor, Taylor and Hobson, *f*/16; 1½ sec., July, fairish light, 4 p.m.; Ilford iso. medium; Ilford P.O.P. Subject lacking in interest, the old mill is not easily recognisable.

Niblett, Miss J. (Ledbury).—"Scotch Firs and Sheep." Atkinson, R.R., *f*/22; April, 3 p m.; Edwards' landscape; mezzotype, "Taken with Thornton-Pickard's shutter." Printed from an under-exposed negative. There was no necessity to use a shutter for such a subject. We would point out the incongruity of mounting a rough mezzotype print on a green bevel-edge cabinet mount.

Hancox, R. T. (New Malden).—"Shades of Evening." Single landscape, *f*/16; 7 sec., dull light, sunset, 6.30 p.m.; Ilford special rapid; Ilford P.O.P. As the competitor himself remarks, a figure, or some animals, would have improved this picture, otherwise the effect of evening has been fairly well rendered.

Cawood, E. J. (Leeds).—"A Stream View on Bushy Cliff." French, *f*/25; 1 sec., June, sunlight, 2.30 p.m.; Sandell; ordinary; Eastman's combined. Under-exposed, hard and chalky, an utter absence of detail in shadows.

Briggs, C. B. (London).—"Home of the Water Fowl." Ross' R.S., *f*/11.3; 4 sec., Aug., dull and cloudy, 11.30; Marion's ordinary; Ilford P.O.P.; sulpho-cyanide. The negative is fogged, and the definition is bad; a smaller stop would have improved matters.

Tapson, E. J. (Brockley).—"A Peaceful Spot." R.R., *f*/32; 2 sec., May, sunshine, 1.45 p.m.; Paget xxx.; Ilford P.O.P. A clean-looking print, but would have been improved by a more decided sky.

Kempster, J. (Plaistow).—"Langdon Hill, Essex." Lancaster's instanto, half-plate; full aperture, 5 sec., June, dull and cloudy, 6 p.m.; Ilford ordinary. A dull print, lacking vigour, and heavy in the shadows.

Williams, J. (Festiniog).—"Pengwern Mill." R.R., *f*/22; 5 sec., July, diffused, about 3 p.m.; Ilford ordinary; Ilford P.O.P. Negative under-exposed. A difficult subject to render satisfactorily. Reduce the strength of the developer.

Broughton, Eleanor (Pembrokeshire).—"Sunshine and Shadow." Ross' R.R., 32; cap, March, sunshine, noon; Castle; cold-bath platinotype. By cutting a narrow strip out of the middle of this photograph a pleasing picture might be produced. Care should be taken to avoid branches of trees protruding into the picture without any visible means of support.

Dart, W. B.—"The Torridge at Weir Gifford." In this picture the clouds have an unnatural appearance; in fact, we think the negative was inverted. There is an absence of half tone, and the shadows are heavy. The hard lights in the water could be softened by slightly sunning down.

Huntley, Mary E. (Pulborough).—"The Mill Pond, Ashington." Half-plate, medium stop; 3 sec., April, strong sun, 11 a.m.; Ilford ordinary; hot platinotype. The perfect reflection of all objects in the picture in the clear water produces a peculiar effect. The picture would be improved by cutting nearly an inch off the foreground.

Smith, J. K. (Yorks).—"Bird's-eye View of Otley from Chevin, Yorks." Taylor, Taylor and Robson's R.R., *f*/22; 1-30th sec., June, sunlight, 2.30 p.m.; Elliott and Son's Studio plate; Eastman's Solio. The definition of this photograph attests the excellence of the lens, apart from that the photograph lacks interest.

Harris, H. (Hayward's Heath).—"Valnord, Guernsey." Lancaster's R.R., *f*/32; 1 sec., June, sun, noon; Thomas' T.C.E.R.; bromide (Eastman's), metol developer. The blank wall in the foreground robs this photograph of any pretensions to the pictorial, though it is doubtless of interest to botanists or horticulturists.

Shimwell, H. (Birmingham).—"A Derbyshire Dale." Lancaster's single lens, *f*/32; 6 sec., May, weak sunlight, 7 a.m.; Castle plate; Whatman's paper; paper sensitised with ammonia-nitrate silver bath. A characteristic "dale" scene, well rendered by the rough-paper process employed.

Isaacson, J. (Liverpool).—"Grange-over-Sands." Eureka R.R., *f*/16; 3 sec., October, bright, 3 p.m.; Ilford. A very charming photograph, full of atmosphere and gradation. One of the best pictures in the class.

Hollamby, H. (Northumberland).—"Bamburgh Castle and Village." Lancaster's instanto, *f*/1 35; sec., July, clear, 4.55 p.m.; Barnet; Ilford P.O P. A dull, heavy print. Camera not levelled. Composition would be improved by cutting an inch off foreground.

Dixon, M. (Southsea).—"Shanklin Beach, Isle of Wight." Lancaster's 2-guinea half-plate; 3 sec., August, morning, 12.30; Marion plate; bromide paper; hydroquinone. A hard black and white print from an under-exposed negative, camera tilted, and a blank expanse of foreground.

Lees, H. J. (Birkenhead).—"Farm-house and Road, near Grassgarth Hall, Lancaster." Lancaster's Instanto., *f*/20; about 1 sec., June, bright sunlight, 12 noon; Ilford ordinary; Ilford white P.O.P.; borax and gold. This competitor should trim his prints more carefully, and use a sharp knife for the purpose.

Matthews, J. C. (Torquay).—"Cottages at Shiphay, Torquay." Single landscape, *f*/8; 2 sec., May, dull light, 6.45 p.m.; Castle; Ilford P.O.P. A pretty little picture, showing evidence of careful manipulation.

Gibson, Louisa (Berwickshire).—"Linthill Cottage." Lancaster's Rec., whole plate, *f*/20; 1 sec., July, blue sky with clouds, sun shining, about 10.45 a.m.; Ilford ordinary (half-plate); Ilford gelatino-chloride P.O.P. This lady informs us that she is quite a beginner, and as such, the print sent does her credit. The printing and toning have been carefully performed.

Beattie, W. (Edinburgh).—"Croupie Craig." R.R., *f*/10; 2 sec., April, dull light, 12 a.m.; Ilford Iso.; Ilford P.O.P. Frightfully under-exposed. Such subjects should be very fully timed and developed very slowly with a normal developer diluted with an equal bulk of water.

Duncan, A. H. (Glasgow).—"Kirkfieldbank." Taylor, *f*/32; 3 sec., May, sunlight, 7 a.m.; Ilford ordinary; gelatino-cbloride P.O.P. A bright-looking print, which artistically might have been improved by a more careful selection of the foreground and point of view.

Allison, F. W. (Newcastle-on-Tyne).—"On the Allan." Watson's; 5 sec., July, bad light, 3.30 p.m.; Ilford; Solio. Unevenly toned, and too great an expanse of foreground.

James, T. (Worcester).—"View at Trotshill. R.R., *f*/32; 3 sec., June, bright light between thunderstorms, 6.30 p.m.; Castle; Ilford P.O.P. A good technical print, which a suitable sky would have improved.

Goodeve, S. (Leytonstone) —"Godstone, Surrey." Laverne, R.R., *f*/32; 1 sec., June, good light, 4.30; Ilford Iso.; Solio. The camera has been tilted, with the result that the houses appear to be falling over, which, as we happen to be acquainted with the locality, we know they are not.

Times, L. (London).—"Entrance to Pond's Wood, near Hastings." R.R. (Underwood's), *f*/11; May, bright sunlight, 11.30 a.m.; Ilford ord.; Solio paper. Figure placed too near the centre; print an unpleasant coppery tone.

Mills, W. (Rochdale).—"Sunshine and Rain." Ross's portable symmetrical, *f*/32; 3½ sec., April, sunlight and overcast, 3.30 p.m.; Paget xxxxx; Ilford P.O.P. A rather weird effect of light and shade; good technically.

Robinson, G. (Antwerp).—"Villas in Oban." Steinheil, *f*/32; 2sec., August, bright sunshine, 10 a.m.; Ilford; bromide. Flat, weak print; subject entirely without interest.

Bisset, J. (Aberdeenshire).—"Sunshine and Shade." R.R., *f*/38; 5 sec., June, sunshine, 4 p.m.; Imperial ordinary; Solio; combined. Terribly under-exposed. Try again on same subject with twice the exposure, and dilute the developer with equal bulk of water.

Peirce, H. B. (Ryde).—"A Sussex Corner." Lancaster's Instanto., *f*/12; 2 sec., April, dull, 9 a.m.; Barnet's extra rapid; Ilford's white P.O.P. "The negative was developed with a 10 per cent. pyro and ammonia developer." Under-exposed. Heavy shadows. Bromide would probably produce a better print.

Clayton, W. (Leicester).—"Wanlip." Darlot (Paris) single-view lens, *f*/24; 2 sec., April, sunshine, 3 p.m.; Ilford ordinary, Ilford P.O.P. A fair print; too much blank foreground.

Thompson, G. (Campbeltown).—"Where the Weary Find Rest." Lancaster's Instanto., *f*/30; 1 sec., June, good light, 8.45 a.m.; Ilford. Had we many photographs of this type to criticise we fancy we should "lie with the weary" ourselves. The subject may possess interest to those of a morbid turn of mind, but hardly stands a chance in a competition.

Marshall, T. F. (Richmond).—"The Way to the Meadows." Lancaster's Instanto., *f*/30; 4 sec., June, diffused light, 3.30; Richmond ordinary; P.O.P. Too much contrast; a hard print from an under-timed negative. Double the exposure and dilute the developer.

Percy, T. B. (London).—"A Water Wheel." Optimus 7 by 5 R.R., about *f*/22; 8 sec., November, fair, 3 p.m.; Phœnix; platinotype. The halation in the branches of the trees in the upper portion of the picture completely spoils the effect.

Cooke, J. G. (Londonderry).—"Kiltinane." Lancaster's Rectigraph, *f*/32; 20 sec., June, very cloudy day, about mid-day; Ilford slow; gelatino-chloride. "Showery day when taken." A good subject well treated, but rather over-printed. Probably the negative would give a better result in bromide.

Currie, J. E. (London).—"A Sussex Cottage." Landscape 6 in.

f/11; ¼ sec., April, sunshine, very good light, 12.40; Ilford ordinary Mezzotype. Although the effect of sunshine has not been realised, the print is a good one, and the work shows promise.

RICHARD, G. (Swansea).—"Peep in Brynmill Park, Swansea." Lancaster's Rectigraph, *f*/20; 2 sec., October, dull light, 11.45 a.m.; Ilford ordinary; Ilford P.O.P. A very fair print, subject conventional.

WHEATCROFT, A. (Devon).—"Contentment." Cheap R.R., *f*/7; 1-16th second, July, cloudy, sun obscured; Ilford medium Iso.; Ilford P.O.P. "Print is cut down from a quarter-plate." We should call this a study of street rather than a landscape. Definition very bad. The lens appears to be both "cheap" and "nasty."

PAYNE, W. (Leicester).—"A Devon Cottage." Taylor, Taylor and Hobson's rectilinear, *f*/16; ½ sec., June, sunshine, 3 p.m.; Paget's xxx.; Eastman's Solio. A muddy-looking print, due to unskilful toning. The negative is probably a good one, and would give a better result in platinum.

BYGRAVE, F. E. (Blandford).—"Penny's Island, Blandford." Marion's landscape; 3 sec., June, hazy, 7.15 a.m.; Ilford ordinary, Ilford P.O.P. Flat print, and uninteresting foreground.

ROGERS, C. F. (Chelsea).—"The Mill, Mitcham." Dallmeyer 5 by 4, *f*/10; 4 sec., July, dull, 7 a.m.; Ilford new rapid series; Ilford bromide, smooth, slow; hydroquinone developer. Badly toned, and hard white sky.

POWTER, P. (Pilgrim's Rest).—"Sunset on Manchsberg, Transvaal." Ross' R.R., *f*/16; 6 sec., sunset, 6.30 p.m.; Ilford Iso. inst.; matt silver, chloroplatinite potassium. One of the best pictures in this class. Full of atmosphere and a luminous sky. Carefully printed and toned.

PADGETT, HELENA (Winchelsea).—"Dead Man's Hollow." Wray's Rect., *f*/16; 10 sec., June, diffused sunlight, 5 p.m.; quarter Ilford ordinary; Pizzighelli. Were the competitor not a lady we should be inclined to say bad things of this photograph. The negative is very much under-exposed, hence the heavy shadows and lack of detail.

MERRY, L. T. (London).—"The Deserted Village." Open aperture, about *f*/8; inst., May, bright sunshine, 11 a.m.; Imperial red label; Ilford P.O.P. Would be improved by cutting away some of the foreground, and wants a sky.

FOX, E. (Wolverhampton).—"Through the Wood at Penn Common." Lancaster's R.R., *f*/18; 3 sec., June, sunshine, but cloudy, 3 p.m; Marion's; Ilford P.O.P. Badly focussed and spotty, owing to the negative having been taken in sunshine. Again we say views of this character are best secured in diffused light.

RENFREE, W. (Leytonstone).—"Belle Vue Park Bridge, Lowestoft." Laverne R.R., 32; 2 sec., June, diffused, 12.45 p.m.; Ilford iso.; Solio. The lady is decidedly the most attractive feature in this photograph.

DARLING, J. G. (Chicago).—"Autumn." Dallmeyer's single landscape, *f*/30; 2 sec., Nov., bright but no sunlight; 1 p.m.; Carbutt; Solio, combined. A rather flat negative; would have given a better print on bromide.

PREEDY, D. H. W. (King's Norton).—"Peace." Griffiths', *f*/16; 3 sec., April, fair light, 3.30 p.m.; Marion's; Solio; Powell's compressed gold toning bath. The church is too near the middle of the photograph, which is rather over-printed.

PEARCE, D. (Madras).—"Racecourse, Wellington, Madras, India." Ross's, R.S., 2; 1-16th sec., May, hot sunlight, 3 p.m.; Ilford's rapid, white label; sensitised paper. A very fair instantaneous picture.

NICHOLSON, A. (Leeds).—"Cottage Pannal." R.R., *f*/8; 2 sec., July, diffused light, 7 p.m.; Ilford ordinary; Solio; combined. Fair technique, subject wanting in interest.

REEVES, G. F. (Leamington Spa).—"Offchurch." Ordinary single, *f*/16; about 3 sec., July, very dull light, 3.30 p.m.; Ilford ordinary; Ilford P.O.P. This competitor tells us he is quite a beginner, therefore we forbear to criticise. We should say his photograph was printed from an under-exposed negative.

JONES, A. D. (Manchester).—"Isle of Wight Cottages." Wray's R.R., *f*/22; 2 sec., Aug., bright sunlight, 10 a.m.; Ilford ordinary, half-plate; Ilford P.O.P. Good technically, but spoilt from a pictorial point of view by the blank white sky and the branches of trees without visible support.

MACMULDROW, FLORENCE (Liverpool).—"In the New Forest, near Brockenhurst." Single; inst., April, sunlight, noon; Ilford inst.; Ilford P.O.P.; sulpho-cyanide of ammonia; Griffiths' hand-camera. A nice little landscape, showing careful work, would be improved by printing in some suitable clouds.

ROBERTSHAW, J. (Yorkshire).—"The Stepping Stones on the River Hebden." Optimus 7 by 5 R.R., *f*/24; 2 sec., April, sunshine, 3.30 p.m.; Ilford ordinary; Ilford P.O.P. A very pretty photograph and a well-selected subject, carefully printed, but quite spoilt artistically by the old gentleman standing right in the middle of the picture.

GOSS, A. (Cheshire). "An Oak of Eastham." Lancaster's Instanto., *f*/30; 15 sec., July, dull light, raining, 2.30 p.m.; Ilford medium; Ilford P.O.P. The principal object, the tree, too near the centre of the picture; the negative is too strong in contrast; for such subjects less pyro than usual should be used.

TOWSE, J. S. (Cafford).—"Cheddar, Somerset." Landscape, *f*/11, ½ sec., Sept., very bright light, 3.30; Ilford slow; Solio; combined toning and fixing. A very fair print.

MARTIN, R. F. W. (Woking).—"Loose Valley, Maidstone." Ross' R.S., *f*/32; 2 sec., August, bright sunshine, 11.15; Ilford ordinary; Ilford P.O.P. A bright-looking print, rather spoilt by the over-printing of the clouds. Distance well rendered.

BOND, F. (Biggleswade).—"The Heath, Woburn Sands." Landscape, *f*/32; 2 sec., July, sunlight, 10 a.m.; Ilford ordinary; Ilford P.O.P. The picture would have been improved by introducing a suitable figure, or a cart, to break up the large expanse of road. The tone is rather too warm, and the print should have been longer in the toning bath.

GLASGOW, J. (Ryde).—"Cottage in Devonshire." Single achromatic, *f*/20; 3 sec., May, fair light, 2 p.m.; Ilford ordinary; Ilford P.O.P. A pleasing little study.

STONE, C. S. (Pinner).—"Landscape." Single, *f*/11; 1 sec., June, sunshine, afternoon; Thomas' Extra Rapid; silver. A cottage, a man, and a dog can scarcely be called a landscape. The technique is good, but the subject possesses little pictorial merit.

TAYLOR, W. (London).—"In the Wood." R.R., *f*/24; 8 sec., April, good light, 12 30; Paget xxx.; P.O.P., sulpho-cyanide. Lacks interest; good technical work.

THOMPSON, J. (Burton-on-Trent). —"Sulby Glen, Ramsey." Single landscape, *f*/30; 10 sec., June, bright light, 4 p.m.; Ilford ordinary; Solio, borax. Rather under-exposed; a better result would have been obtained on a dull day.

Holiday Resorts and Photographic Haunts.

IN KIRKCUDBRIGHTSHIRE WITH A CAMERA.

By R. HYSLOPIAN MACHUS.

OF all the articles on "Holiday Resorts and Photographic Haunts" brought forward from time to time in the photographic journals and elsewhere, those relating to poor old Scotland seem to be few and far between in the maze of eulogies on Norway, Switzerland, Wales, and different parts of England. And of those dealing with Scotland, "With the Camera on the Clyde" or a "Tour in the Trossachs" usually form the subject of such articles, both of which places, of course, are capital fields for photographic work. But let us go south a bit and taste of the sweets in store for the photographer in Kirkcudbrightshire, particularly in the district known as the Glenkens. Down here one has highland as well as lowland scenery, high heather-clad mountains and low flat sketches of cultivated land which present "bits" galore for the picture-seeking photographer.

This crude article must not be taken as a complete guide to the Stewartry; very far from it. It is the writer's intention to notice only the places which he has personally visited and photographed in, merely mentioning a few of the principal places of interest in and around the larger towns through which one has usually to pass when travelling in this district, but directing special attention to the rural scenes and country life of this part of picturesque Scotland. Of course, the starting-point and trains are matters for the traveller and timetable, but suppose we take Glasgow. There are numerous trains from the city to Dumfries (the first important stoppage). The line runs through magnificent scenery almost the whole way, and the journey is performed by an express train in less than two hours. In Dumfries itself (the queen of the south) there is not a great deal for the photographer. The fountain in High Street may be photographed, and then a view of the mid-steeple and part of the town can be had, with the fountain as a point of view. Further up the High Street Burns' statue might be impressed upon a plate. St. Michael's Church and churchyard should also be visited, as here stands the mausoleum in which the remains of Scotland's immortal bard are interred. In Dumfries there are several good hotels; the "King's Arms," in English Street, is a very comfortable house. A capital restaurant is Oughton's, in High Street.

By conveyance the photographer can get to Caerlaverock Castle, Sweetheart Abbey, and Lincluden Abbey, if architectural photography be his especial line of work.

Let us now touch at Castle Douglas, which can be reached in half an hour by train from Dumfries. Almost the only features of photographical interest in this town are the churches, of which there are, I think, seven, and beautiful ones too, especially the episcopalian structure down by the loch. The town may be photographed panoramically from the high ground behind, or, closely, from the top or bottom of the main business street. But the tourist should

never leave Castle Douglas without paying a visit, camera in hand, to the Carlingward Loch, which is close to the town. This is a fine loch for the photographer. Unlike most of its kind, it is not one unbroken expanse of water, but is studded over with little islands, which are covered with trees, whose branches slant and sway artistically in all directions. Many of the quiet corners of the lake are enlivened by the gracefully floating forms of large white swans. Then, if a little life is wanted, on the rocky shore are usually to be found rustic urchins fishing for perch, with rods cut from the trees which border the loch. Often, too, in the hot summer afternoon, cows come or are brought down to the water to moisten their parched throats and bathe their heated limbs. On the day I visited the loch, on a prettily composed bit of the shore stood a picturesque caravan, and in the close vicinity several quasi-equine specimens were browsing about; and down by the water's edge was arranged an artistic group of sun-tanned gipsies around the familiar "pot," in which was cooking their mid-day meal—the whole scene (a frequent one there, I believe) forming an excellent subject for a picture.

Of hotels in Castle Douglas there are several, and each one is a first-rate house. I can recommend the old "Douglas Arms." It was at this hotel that the old-time mail-coaches used to rest when on the journey between Portpatrick and London.

About three miles from Castle Douglas, on an island in the river Dee, stand the ruins of Threave Castle, which can be photographed if for historical purposes, but from a purely photographic point of view it is scarcely worth while.



"Washing Day."

Suppose we now leave Castle Douglas, and proceed, with one of the wagonettes which go once or twice a week, on an eight miles drive to Auchencairn. This drive is an exceedingly pleasant and healthy one, the road leading through some fine scenery, which, however, is hardly suited to the camera. On the hot summer's day that I drove to Auchencairn, I could not form the ghost of an idea of the country through which the break was passing, as the whole view was completely shut out by umbrella to right of me! umbrella to left of me!! umbrella in front of me!!!—to say nothing of the parasol spokes which were continually coming in a vicinity of my hat and eyes, that was decidedly more close than pleasant. On this journey, too, I cannot but remember how my discomfort was further augmented by having the great sub-division of my left pedal extremity, literally "squeegeed" to the bottom of the vehicle by the tacketed "clodhopper" of a twenty-stone specimen of feminine humanity. If ever there is, by the way, an opportunity of hearing the Galloway dialect of broad Scotch, it is when seated in such a conveyance, crammed with all sorts and conditions of *women*." Such remarks as the following run high; too high for photographic purposes:

"O my! Mistress Gilhooly, yer bunnet's slippin' off!"

"My certies! is't really? I doot my hair's no heich eneuch. Ye ken I didna ettle on the 'bus jugglin' this way, or I wid hae putten eight or nine mair peens in't," etc., etc. However, as I had "been there before" I can testify for the beauty of the scenery on the road to Auchencairn.

Good views can be had from either the top or the foot of this little village. Figures may be had in abundance, such as youngsters in picturesque attire, either chasing ducks or nursing pet rabbits, of which latter nearly every child in the village has several. One has to take care, however, not to just crowd out the rest of the view with these figures, as "subjects" persist in sticking themselves before the eye of the camera. And if fond mothers should happen to be at their cottage doors, so much the worse, for they are sure to call out such things as "Quick, Susy! get on yer new Sunday hat—yon ane wi' the green feather in 't—luk smert noo!—the gentleman's waitin' fur yer likeness!" (The gentleman, in my case, was not so sure of that.)

By going down the hill through the village, and turning at the foot to the right along the Shore Road past the tennis courts and bowling-green, one can reach Auchencairn Bay (Solway Firth). On the shore here numerous pretty bits may be secured. There are several "cottages by the sea," which, with suitable surroundings and appropriate figures, ought, in capable hands, to make good pictures.

When the tide is very low, one can go with the fisherman, across the bare sands and over Almorness Hill, to the Urr salmon nets, which—with the fisherman at work—will make a fine picture, if the light be soft, the atmosphere a trifle hazy, and the composition well executed.

To the observer, good "spots" can be got further along the Shore Road, as far as Balcary Point and Tower.

During my stay at Auchencairn, my favourite hunting ground—or water—was the Auchencairn Burn. This photographically exquisite little stream runs through the village, and its best part can be easily got at by inquiring of anyone the way to the Colyn Mill cottages, past which the brook flows. The cottages themselves are worthy of a plate or two, being picturesquely situated, and to which "modern improvements" are total strangers. As to the streamlet, it is literally teeming with bits for the artist-photographer—or the prize competition man! At the point where it passes the mill there is a little bridge, on each end of which are some fine trees, and usually in the quiet, transparent pools near the arch are to be seen groups of ducks and their downy families flying about, and occasionally one may be seen proudly standing erect upon some emergent stone, admiring its reflection in the watery mirror at its feet. All this, with well-positioned figures and a good foreground, would be hard to beat as typical of the place. Then, further up the burn, there are beauty spots galore, and here and there the straight lines of the banks are artistically relieved by the rough tree trunks, thrown across from side to side to keep the cows, which are often to be caught at the water's edge drinking, within their own domain. Along the banks of the stream in some places, runs a fine specimen of "dyke," the unhewn stones of which are partially overgrown with climbing weeds and honeysuckle. In places such as this, with the aid of a few village urchins (who are always where they think coppers are), some capital *genre* studies may be had for the taking.

Instantaneous exposures can be made with impunity, as scarcely any portion of the stream is so overgrown as to render that impossible.

About four miles from Auchencairn lies the village of Dundrennan. Several plates may be exposed on the hamlet and its varied surroundings. Planting the camera at one end of the street, a pretty scene should present itself on the focussing screen. On one side, close by, is the "village smithy" with its attendant *debris* of broken carts and farming implements. Then right down the way, on either side, stand the irregular buildings, which go to form a most picturesque street.

Then there is the fine old ruin of Dundrennan Abbey. This ancient structure can be easily got at, as it stands but a few yards from the main thoroughfare. The keys and permission to photograph may be obtained at the manse, which is at hand.

Photograph the exterior of the ruin from perhaps two different standpoints. Next take the chapter-house, and finally one or two of the roofless interior. About six miles further on from Dundrennan is the good old town of Kirkcudbright. Here photograph the old castle, preferably from the other side of the Dee than that upon which the ruin stands.

A general view of the town is to be had from the woods behind. A pretty photograph can be procured by erecting the camera on the lover's walk, which runs along by the riverside. This will give the river, with desirably a boat as a foreground, then the bridge, and the town in the distance.

(To be continued.)

King's Norton.—In the account of the above place given last week, in the third line from the end of the piece, the word "trees" was accidentally put in. "Spots" is the word intended.

The Photographic Convention.

(*Continued from page* 64.)

LATITUDE IN EXPOSURE AND SPEED OF PLATES.

By F. Hurter, Ph.D., and V. C. Driffield.

It is generally assumed, because our researches have led us to pronounce exposure, and not development, to be the determining factor in photography, that therefore the production of similar prints from a series of negatives which have received widely varying exposures, and have been submitted to widely different treatment in development, totally upsets the whole of our conclusions.

Our attention has been called, from time to time, to such series of negatives; and in all the instances which have come to our notice, there has been no difficulty whatever in arranging the negatives in the order of their exposures; nor has it been much more difficult, by mere inspection, to so arrange the prints. If, however, such negatives be measured, and their density ratios ascertained, the order of the negatives, with respect to duration of exposure, is readily decided beyond all possibility of error.

As an instance of such a series of negatives, we give our measurements of four plates sent to us, two years ago, by a gentleman in Ireland, as an illustration of the latitude in exposure obtained by appropriate treatment during the operation of development. The subject was the same in all four plates, and consisted of a field bordered by trees. In the middle distance was a grey house, one side of which was illuminated by the diffuse light of the sky, and the other side by the sun. We measured the densities of the sky, the two sides of the house, the most transparent shadows in the trees, and a spot in the grass. In order to insure the measurement of precisely the same spots in all four plates, masks with circular openings were fixed on each negative, so that the circles coincided when the subjects coincided. The four plates respectively received exposures of 1, 10, 30, and 60 seconds, and the resulting negatives yielded prints differing so little in quality that they were deemed to have completely demolished our contentions. The following table gives the results of the measurements:—

Densities.

Exposures.	1″	10″	30″	60″
Darkest shadow in trees ...	·378	·553	·973	1·028
House (shadow side)	·833	·750	1·371	1·315
Grass	·930	1·005	1·706	1·581
House (sunlit side)	1·721	1·571	2·121	1·921
Sky	2·598	2·236	2 578	2·308

A glance at the densities of these negatives, particularly those indicating the extreme range (darkest shadow and sky), shows how widely they differ from each other; whilst a glance at the negatives themselves surprises one, by revealing the inability of the eye to readily appreciate these differences. The eye is still less capable of appreciating the great alteration in the density ratios given in the next table.

Density Ratios.

Exposures.	1″	10″	30″	60″
Darkest shadow in trees ...	1	1	1	1
House (shadow side)	2·2	1·35	1·40	1·28
Grass	2·46	1·81	1·75	1·53
House (sunlit side)	4·55	2·84	2 17	1·86
Sky	6·87	4·04	2·65	·24

These ratios decrease with increased exposure in perfect accordance with all our experiments. The negatives are very different indeed in this respect, and fully bear out our contention that the density ratios are a function of the exposure, and not of modifications in development. We have no hesitation in asserting that such negatives may always be arranged in the order of their exposures by anyone acquainted with the subject. In printing quality, as regards time, these negatives also differ considerably.

It is clear, therefore, that these negatives do not illustrate in a very striking manner what they were intended to illustrate, namely, the great latitude in exposure. They do, however, illustrate another point, namely, the great latitude there is in the quality of prints acceptable to the eye, and the curious inability of the eye to judge numerical values of density differences. In this faulty perceptive power of the generality of eyes lies a great deal of the latitude of exposure.

Various authorities give wholly different limits for this latitude in exposures. Professor Burton has given it as 1 : 30, but states that he has succeeded with some plates with exposures ranging from 1 : 80. We, ourselves, stated in our original paper that the plates which we used in our experiments (Nos. 21 and 22) would have given good pictures of subjects with contrasts varying from 1 : 80, though the exposures had varied from 1 : 2, that is, the plates were capable of recording, *truly*, contrasts ranging from 1 : 160.

Latitude in exposure depends—

(1) Upon the quality of the plate.
(2) Upon the range of contrasts in the subject.
(3) Upon the degree of truth with which the contrasts are to be presented in the positive print.

The quality of the plate is the most important question. There are some plates which have no latitude of exposure at all, or which are, at any rate, incapable of rendering any range of contrasts in this subject with any degree of truth, whatever exposure may be given. There are other plates capable of recording, *truthfully*, a comparatively wide range of contrasts, though exposures may vary from 1 : 5, or 1 : 6, and if truthfulness of the intermediate tones be not absolutely demanded, such plates are capable of yielding useful negatives within such ranges as 1 : 20 or 1 : 30.

These different qualities of photographic plates are best represented graphically by the curve which we have termed the "characteristic curve" of the plate. The method of obtaining this curve will be presently described. Diagram No. 1 presents two characteristic curves of two well-known brands of plates which we will call A and B. We at once perceive a characteristic difference between these two plates. While the curve belonging to plate A is nearly straight from exposure 0·625 cm. to exposure 80 cm., plate B yields a curve which has hardly any straight part in it. Now, we have shown that if a plate must truly represent the contrasts of the subject, it can only do so if it possesses a perfectly straight portion within its characteristic curve. The longer this straight part is, the greater is the latitude of exposure for that plate.

Plate A would represent a subject with contrasts varying from 1 : 20 with a high degree of truth, though the exposures varied from 0·625 : 4, or from 1 : 6. If several exposures were made upon several plates, the exposures ranging from 1 : 6, they would yield negatives of very different appearance, giving, however, identical prints, though the negatives were all simultaneously developed in the same dish for the same length of time. But, though all these negatives yielded identical prints, the professional photographer would discard them all but one, which to him, at all events, would be the only really good negative. *There is one exposure, and only one, which yields a true representation with minimum density.*

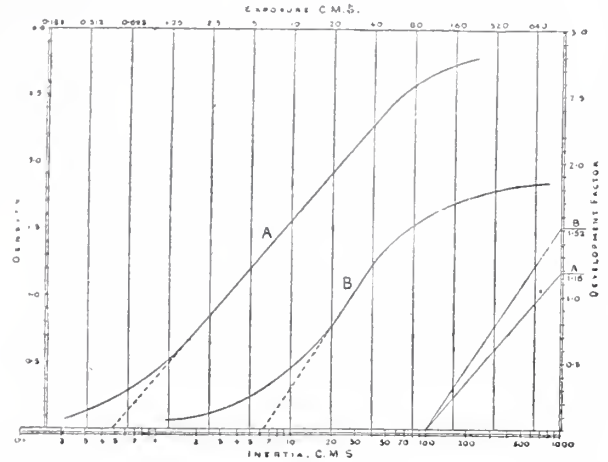
Plate B, on the other hand, would never give a correct representation of any subject. Such plates could not be sold or used if the eye were capable of readily detecting photographic untruth in prints. It is owing to this defect that such a plate can be used at all. But the unsatisfactory nature of the plate, as revealed by the characteristic curve, makes itself evident in practice by the very limited range of exposures which will yield satisfactory negatives. With such plates Professor Burton would have tried his art of altering density ratios in vain.

Next in importance to the quality of the plate is the question of range of light intensities which have to be recorded truly. Plate A is capable of representing light intensities lying between 1 and 70. If intensities had to be photographed embracing a greater limit than 1 : 70, it could only be done by sacrificing truth or proportionality to truth altogether. In the case of plate B, the limit would lie between 1 and 2. The question arises, What are the usual variations in light intensities which have to be considered in photographic practice? Many photographers appear to have highly exaggerated ideas upon this subject. We do not exactly know what Professor Burton's opinion is, but it would appear, from his remarks, that the power of altering density ratios, by variations in the developers, can only be exercised in the case of plates which have received light intensities varying from one to, at least, several hundred. From this we are led to assume that he supposed that the two prints he has recently published represent light intensities varying from one to, at least, several hundred.

Now, it is an easy matter to ascertain the limits of light intensities which have to be dealt with in any given subject; and the following is the outline of the method we adopt in such an investigation. We cut a plate into two parts; upon one part we make a series of exposures to the standard candles, so as to determine the characteristic curve. The other part of the plate is exposed in the camera to the object of which it is desired to ascertain the range of light intensities. We give such an exposure as will produce a correct negative, but it is not necessary to hit this very accurately. The two parts of the plate are then developed together for the same length of time, and with the same developer; and the highest and lowest densities of the negative, and such others as are of interest,

are measured; as are also the densities resulting from the candle exposures. It will be evident that this graded plate, produced by exposure to the candle, serves as the scale wherewith to measure the light intensities actually at work in the camera, and which produced the densities of the negative. For such experiments it is, of course, desirable to select subjects which present sufficient areas of

DIAGRAM NO. 1.



uniform density in the negative. A useful subject because it comprises the entire range of tone, which a paper print admits of rendering truly, is an ordinary folding screen, upon each of two folds of which are fixed a sheet of white cardboard, and a sheet of mat black paper. The screen is so placed that one fold is illuminated by direct sunlight, and the other by the diffuse light of the sky; and so that the sky itself is included in the picture. This subject gives us five densities on the resulting negative, namely:—

Sky.
White, illuminated by the sun.
White, " " diffuse light.
Black, " " the sun.
Black, " " diffuse light.

The following are the details of such an experiment, and diagram No. 2 illustrates graphically the method of ascertaining the equivalent of the light intensities in candle-meter seconds. A plate was cut into four parts; three of them were exposed in the camera to a subject as just described, and the fourth was exposed to the standard candle, the exposures ranging from 0·312 cm. to 160 cm. The three exposures given in the camera were 0·8, 4 and 24 seconds respectively, and all four plates were developed together in one dish for the same length of time. The densities of the negatives and of the graded plate were found to be—

DENSITIES OF NEGATIVES.

Exposure.	0·8″	4″	24″
Sky	0·940	1·695	2·260
White in sunlight... ...	0·940	1·735	2·280
White in shade	0·620	1·360	2 080
Black in sunlight	0·120	0·530	1·290
Black in shade	0·060	0·320	1·025

DENSITIES OF GRADED PLATE.

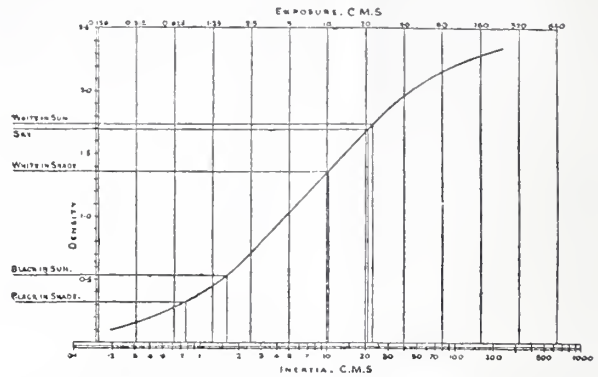
Exposure. cm.	Density.	Exposure. cm.	Density.
0·312	0·150	10	1·360
0·625	0·275	20	1·665
1·25	0·449	40	1·935
2·5	0·700	80	2·160
5·0	1·040	160	2·295

The densities of the gradations obtained by these ten exposures were plotted as a curve, the logarithms of the exposures as abscissæ, and the densities as ordinates. Parallels corresponding to the densities of the three negatives were then drawn, and where they intersect the characteristic curve perpendiculars were drawn through the points of intersection. These perpendiculars indicate at once the equivalent exposures in centimetres which produced the corresponding densities. In diagram No. 2 the densities of the negative which received an exposure of four seconds are thus plotted, and it will be seen that the respective equivalent exposures are—

Negative, 4 secs. exposure.	Sky	20 80 cm.
	White in sun	22·50 "
	" shade	10·20 "
	Black in sun	1·62 "
	" shade	0·77 "

It will thus be seen that the whole range of light intensities, from matt black in the shade to the sky or white cardboard illuminated by the sun, is as 0·77 : 22·5, or as 1 : 29. Similar results were obtained with the other two negatives, and the following table gives their equivalents, the highest light being put = 30.

DIAGRAM No. 2.



Relative intensities of light emitted by	As shown by negatives exposed.			Mean.
	0·8″	4″	24″	
Sky	30	27·7	29	28·9
White in sun	30	30	30	30
" shade	15	13·6	13 0	13·8
Black in sun	1·83	2·1	1·78	1·90
" shade	1·16	1·02	1·01	1·06

We learn from this experiment that an object illuminated by direct sunlight is about twice as bright as the same object in the shade; and that the whole range between a matt black object in the shade and a brilliantly illuminated sky is about as 1 : 30. It will also be seen that the exposures given in the camera vary as 1 : 30, and yet the same relation as to light intensities is revealed by the shortest, as by the longest exposure.

If we now examine Professor Burton's statements in the light of this, to him, evidently new knowledge, we have to point out that, according to his own confession, he cannot alter density ratios between limits of exposures 1 : 10; and he would not, we presume, undertake to seriously alter density ratios between such narrow limits as 1 : 30, since he says that "it is necessary to have ranges of exposures of at least several hundreds to one to be able readily to vary the density ratios."

Now, assuming certain conditions, *actually never present in photographic practice*, it seems, according to Professor Burton, true that it is possible to vary density ratios when the exposures vary between at least several hundred to one. Such variations do not occur in ordinary subjects; the light intensities vary between limits of 30 : 1 at most. Professor Burton's faculty of producing negatives which yield similar prints is not due to his mode of development; it lies wholly in the latitude of the plate, and in the narrowness of the range of light intensities in his subject. He could have obtained identically the same result, and possibly a better, by means of *one* developer, and by simply varying the time of development for the shortest exposures.

Two negatives are alike in their printing quality when the density differences are alike throughout, whatever the density ratios may be. Two negatives may have totally density ratios, and yet be equally true to nature, and yield identical prints, whatever printing process may be employed, so long as it is the same in both cases. Thus, so long as the light intensities of a given subject lie within a certain limited range, and the time of exposure is such that the densities produced fall within the straight part of the characteristic curve, so long will the density differences for the same subject be independent of exposure, and alike.

Suppose the length of the straight part of the curve cover a range of exposures 1 : E; and the light intensities to be photographed lie

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between the limits 1 : I, the latitude of the exposure would then be $1 : \frac{E}{I}$; and within these two limits any exposure would produce negatives which, developed in the same developer for the same length of time, would yield negatives giving identical prints. Take the case of plate A: The straight part of its characteristic curve may be taken as extending from exposure 1 cm. to exposure 80 cm., *i.e.*, 1 : 80. If a subject had to be photographed which was illuminated by diffuse light only, and in which the light intensities varied from mat black to white, or even more, say a range of 1 : 20, the plate would yield negatives with exposures varying from 1 : 4 almost identical in printing quality, though they were all developed together. If a little deviation from truth is permissible, and the portion of the characteristic curve lying between exposures 0·312 cm. and 160 cm. (a range of 1 : 512) be considered as sufficiently accurate, the same subject would permit a latitude of exposure of $\frac{512}{20} = 25$, and there would still be very little difference in the negatives, particularly if development be prolonged in this case of the shorter exposures. For a sunlit landscape the latitude would be $\frac{512}{30} = 17$.

The experiment we have described was made on a plate, the straight part of which only extended from an exposure of about 1·5 cm. to one of 50 cm. For an ordinary sunlight landscape its latitude of exposure is therefore small, namely, $\frac{50}{1{\cdot}5 \times 30} = 1{\cdot}1$; and consequently, if a correct negative be required on such a plate, the latitude of exposure would have to lie within ten per cent. of its own value. The negative which was exposed for four seconds is the truest of the three; the one which received one-fifth of this exposure renders the high lights correctly, but not the shadows; and the one which received six times the exposure of the first-named negative renders the gradations as far as white in diffuse light correctly, but not the highest lights. The following table shows the density differences for the various parts of the negatives, which would have to be all alike if the negatives must yield identical prints :—

Exposure ...	0·8″	4″	24″
Density of clearest spot ...	·060	·320	1·025
Density difference—Black in shade and black in sun	·060	·210	·265
,, ,, Black in sun and white in shade	·500	·830	·790
,, ,, White in shade and white in sun	·320	·375	·200
Total range of negative—Black in shade and white in sun ...	·880	1·415	1·255

It will be seen that the negative which received four seconds, the correct exposure, gives for all parts of the subject, with the exception of the highest lights, practically the same density differences as the one which received 24 seconds' exposure. In prints from these two negatives all gradations lying between black in shade and white in shade would be exactly alike, though the exposure was, in the case of one negative, six times as much as in the other. The negative which received one-fifth the correct exposure only renders the high lights with equal truth; if, however, this negative had been developed for a longer time than the other two, its range could have been considerably improved; the ratios remaining the same, the density differences would have altered, and it could easily have been brought to the following :—

Exposure ...	0·8″	4″	24″
Density of clearest spot ...	·100	·320	1·025
Density difference—Black in shade and black in sun	·100	·210	·265
,, ,, Black in sun and white in shade...	·830	·830	·790
,, ,, White in shade and white in sun	·530	·375	·200
Total range of negative—Black in shade and white in sun ...	1·460	1·415	1·255

In this case the resulting prints would have differed little from each other, since all the main gradations lying between black in shade and white in shade would have been represented by the differences—

0·8″	4″	24″
0·930	1·040	1·055

which are so nearly alike that the eye could not detect the difference. Only in the highest lights, beyond white in shade, would the difference be at all apparent. The three negatives differ, however, very materially in the time they require to yield prints of equal depth in the shadows. The last of the series (24 seconds' exposure) requires six times, and the second correct exposure nearly twice (five-thirds) the time which is needed for the first to print to the same depth.

From these experiments it is clear that latitude in exposure is not inherent in modifications of the developer, but in the plate itself, and in the comparatively narrow range of intensities which are ordinarily met with, combined with the inability of the eye to judge of the more or less truthful rendering of the various gradations.

As already pointed out, among the many negatives which may be produced by mere variations in exposure, there is only one which combines truthful rendering of tone with minimum density; and it is this one which the practical photographer aims to secure. For the more accurate and certain production of this particular negative, it is necessary to ascertain the speed of the plate with tolerable accuracy; and we now propose to give a short, practical description of the method we have adopted for this purpose. We believe that many amateur photographers would be glad to be in a position to determine speeds for themselves, and to obtain that knowledge of the properties of their plates which can only be derived from a study of the characteristic curve.

The course we pursued in our original investigations was to expose portions of the same plate consecutively to the light of a standard candle, doubling each successive exposure as we proceeded, and we naturally adopted this course when we came to make our first determinations of speed. The errors to which we found the candle liable, however, when we had not the experience in its use which we have since gained, showed that much was to be desired in order to secure a constant ratio of illumination between the different exposures, and, in order to secure this, we adopted the plan of making our exposures which we are about to describe, and which we believe to be the most satisfactory. By this method the whole of the exposures are made simultaneously, so that any fluctuations taking place in the light of the candle proportionally affect all the exposures, and the determination is consequently more decisive, and less liable to error than if fluctuations in the light were to take place during one or more of the individual exposures. Moreover, the possibility of error arising from the difficulty of accurately timing very short exposures is wholly eliminated.

We will, in the first place, make a few remarks upon the standard candle as a unit of light. While we candidly admit that the candle is by no means an ideal standard, we must say we are not at present aware of any satisfactory substitute. We adopted it, in the first instance, because it was ready to our hand, well known and recognised as a standard, and easily obtained. And we may perhaps be forgiven for entertaining a somewhat higher opinion of it than some of our friends, inasmuch as it was, at any rate, reliable enough to lead to the discoveries we have made. It is asserted that the amyl-acetate lamp is a better standard than the candle, but the practical difficulties in its use are such that we can only say it has not proved itself so in our hands. Altogether, we know of nothing, as yet, better as a standard than the candle; and if the suggestions for its use which we are about to make be adopted, we do not think it will lead to serious errors. Two determinations of the inertia of this same plate which we have just had occasion to make on two different evenings differed only by 0·04 cm., a discrepancy of absolutely no practical moment. We have unquestionably found that the standard candles of different makers do vary, and, for this reason, we think it well to say that the candles we have used throughout our investigations were supplied by Messrs. Sugg and Co., Vincent Works, Westminster. The normal height of the flame of these candles, measured from the lowest point at which the wick blackens, is about 45 millimetres.

Our method of using the candle for the purpose of speed determination is as follows. We will assume that the candle we are about to use has been used before. We light it, and then, with scissors, snip off the hardened tip of the wick; the flame of the candle will now be found to grow steadily in height, and as soon as the distance from the tip of the flame to the lowest point at which the wick blackens has reached 45 millimetres the exposure may commence. The candle flame may now be relied upon to remain sufficiently constant for about ten minutes, and this is amply long for our purpose. If after this time, for any other purpose, the light is required, it will be well to again trim the wick and start

de novo. The height of the flame may be measured by a strip of cardboard, upon which two marks are made at a distance of 45 millimetres apart. It is, of course, obvious that these experiments should be made in a room free from draught, and it is often a wise precaution

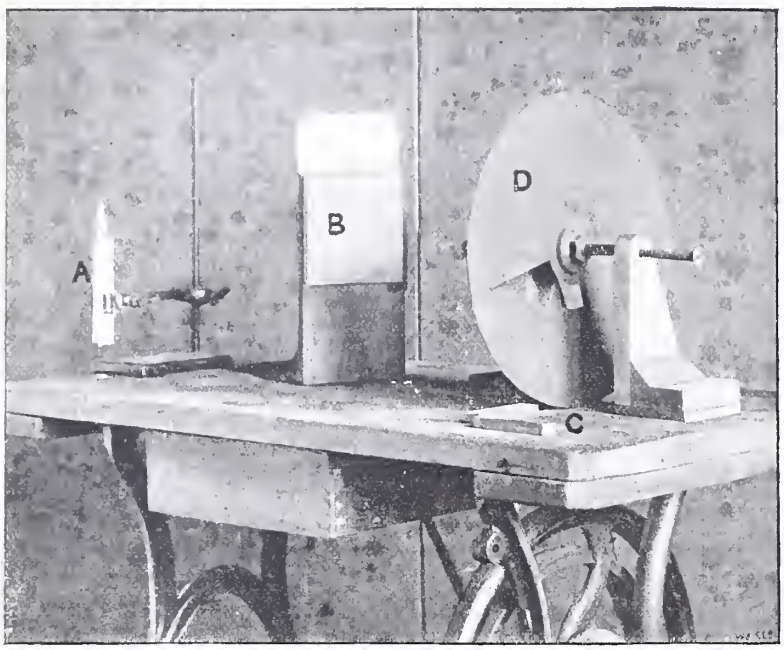


Diagram 3.

to place the candle in a tall box, open on one side and well blackened inside. We are strongly in favour of keeping the candle well in view during the entire exposure, so that, should any fluctuation in the light take place, we may be aware of it. If the candle be used in the open room, all white or bright surfaces capable of reflecting light should be removed.

We now come to a description of the apparatus we use for making speed determinations. Diagram No. 3 shows the form in which we use it. A is the candle; B is the dark slide containing the strip of plate of which the characteristic curve is to be determined; C marks the position occupied by the dark slide during exposure; and D is the revolving disc, by means of which the varying exposures are given; and as this disc forms the most important part of the apparatus, we will proceed to describe it in detail. The disc is preferably made of a sheet of metal, but may be cut out of cardboard. It is 11 in. in diameter, and diagram No. 4 will serve to show how it is perforated in order to yield a series of nine exposures, each double the preceding one. The length of the strip we use for a determination is that of a quarter-plate, or 4¼ in. This length, divided into ten equal parts, gives the width of each successive step in the perforation of the discs. Nine parts only are required for the exposures, the tenth being protected from light in the dark slide during the exposure, so as to provide what we term the "fog strips." It will be seen that the angular aperture of the first perforation is 180 deg., produced by cutting out two entire quadrants of the circle, the next has an angular aperture of 90 deg. or one quadrant, the next of 45 deg., and so on, the angular aperture of each successive perforation being halved till the ninth is reached. These apertures, of course, require to be cut with the greatest accuracy, and the disc, when finished, should be coated with dead-black paint. It should then be mounted on a central spindle, which can be caused to revolve with considerable rapidity by some suitable mechanical arrangement. We, ourselves, called into requisition for the purpose an old sewing-machine stand, which permits the disc to be driven by the foot.

Having completed our description of the apparatus, we will next describe the actual operation of making this determination. First of all, as to the plate. If a plate be examined by placing it between the eye and the red lamp, it will be found that the opacity of the film falls off at the edges. The edges should, therefore, be scrupulously avoided, and the strip should be cut from the centre of the plate, or, at any rate, well away from the margin. The operation of cutting the plate should be conducted as quickly as possible, and as far away as possible from the red light, so as to avoid all fogging action of the light upon the plate. The width of the strip may conveniently be made about one inch. When the plate is securely placed in the dark slide the latter is placed in its position behind the disc. The distance from the candle to the place occupied by the plate is carefully adjusted, and the candle is lighted and trimmed. When the flame has reached the requisite height the exposure may commence. The disc is caused to revolve, and, at a given moment, the slide protecting the plate is drawn, and the exposure continued for the requisite length of time.

Now, as to the best range of exposures to decide upon in the case of a plate of the speed of which we know nothing, we should advise a series commencing with 80 cm, down to 0·312 cm. This range will be found to include as much of the characteristic curve of the majority of commercial plates as is required for a speed determination. A little consideration of the revolving disc, however, will show that, in order to give an actual maximum exposure of 80 cm., it will be necessary to continue the exposure for twice 80, or 160, sec., the candle being placed at a distance of one metre from the plate. The reason of this is that the actual maximum exposure only proceeds during half the revolution of the disc; the light only reaching the plate during the passage across it of 180 deg. out of the 360 deg. Though we prefer to work with the candle at a distance of one metre from the plate, it may be brought nearer to it if it be desired to curtail the exposure. At a distance of 0·707 metre, the light of the candle is equal to 2 cm., and at a distance of half a metre it is equal to 4 cm.

Having exposed the strip, we next proceed to develop it; and here we must say a word or two upon the subject of the developer. We do this knowing perfectly well that we shall meet with considerable opposition; but we, nevertheless, again assert that, for all ordinary photographic work, there is no developer superior to ferrous-oxalate. We prefer it because of the uniformity of the colour of the silver deposited by it, a point of very great importance when we come to the operations of printing and enlarging by developing processes, in which the exposure is arrived at by calculation: we prefer it because we never yet found a plate with which it disagreed, and this is more than can be said of other developers. It will also develop an old plate

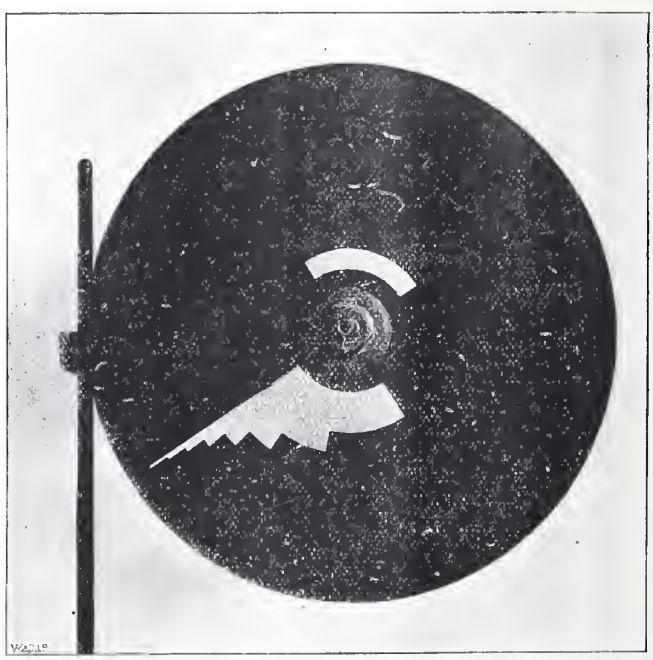


Diagram 4.

which may have been carelessly laid by for years; while, with another developer, it would be hopeless to obtain a passable result. We prefer ferrous oxalate because, of all developers, it is least liable to attack silver salts which have not been acted upon by the light, and because it will not lend itself to the production of foggy

messes. We do not wish, for a moment, to imply that other developers may not have their special uses; on the contrary, for example, we have found rodinal of the greatest value in the case of certain plates, when dealing with extremely short shutter exposures, and also in flash-light work.

However, to proceed with the operation of development. It is advisable that this operation be conducted at a fixed temperature, and we find 65 deg. F. the best to adopt, as it is easily obtainable both in summer and winter. The developer itself should be brought to this temperature, and maintained at it by placing the developing dish in a water bath of the same temperature. The constituents of the developer are intimately mixed by stirring, and, at the moment of pouring on to the plate, the time is noted. The dish should only be rocked for a few moments in order to expel any air bubbles from the surface of the plate, and should then be covered up, so as to expose the plate no more to the red light than is absolutely necessary. Examination of the plate during development should be avoided as far as possible, as no red light whatever is safe in the case of even a fairly sensitive plate; and we believe that too frequent examination, prompted by curiosity or impatience, is to some extent responsible for alleged alterations in density ratios. About five or six minutes will, as a rule, be found the best length of time to continue development, in order to obtain that range of gradation most suitable for subsequent measurement. But, however long development may be continued, the time occupied should be carefully noted. The object of the fixed temperature, and the exact time a given plate takes to reach a certain development factor, is of the utmost importance if we afterwards desire, upon a similar plate, to produce another negative having a different range of density gradations.

After development, the strip is fixed and washed in the ordinary way, and, after washing, it is well to wipe the surface of the film gently with a plug of wetted cotton-wool. The plate may be treated with alum if desirable, and both the alum and fixing baths should be fresh and perfectly clean. As the films of some plates are liable to loosen from the glass, when submitted to the heat of the lamp in the photometer, it is sometimes well to soak the plates for a few moments in a weak solution of glycerine after washing and before drying. When the plate is dry, and this may be hastened by means of alcohol if desired, the back of it should be thoroughly cleansed, and the film wiped with a silk handkerchief. It will now be found advantageous to define the dividing lines of the smaller densities with a pen and ink on the film. This will materially assist when we come to measure the plate, which operation may now be carried out. We do not here propose to enter into any description of our photometer and the method of using it; this will be found in our original paper in the *Journal of the Society of Chemical Industry*.

The nine different densities and the "fog strip" having been measured, and having deducted, from each exposure density, the density of the incipient fog of the plate, and that due to the glass and film as given by the "fog strip," we proceed to plot the characteristic curve on one of the skeleton diagrams supplied for the purpose by Messrs. Marion and Co. Assuming that our actual maximum exposure was 80 cm., we mark on the ordinate corresponding with this exposure this density, minus fog, due to the 80 cm. exposure; and so on till we reach the ordinate corresponding with exposure 0·312 cm. Having thus plotted all the nine densities, we take a piece of black thread and stretch it along that part of the curve which practically forms a straight line, and which indicates the position and extent of the correct period. This enables us to decide upon the position of the straight line before we actually draw it on the diagram. We now draw the line, and continue it till it intersects the inertia scale at the bottom of the diagram. The point at which the intersection takes place gives the inertia of the plate, which is then converted into the speed by dividing it into the constant 34. For example, inertia 1 = speed 34. We may now join up to either end of the correct period curves passing through the remaining points of the determination. The curve at the upper end will represent a portion of the period of over-exposure, and that at the lower end of the period of under-exposure; the whole representing the most important features of the characteristic curve. The details just described will be better understood by a reference to diagram No. 1.

We should here like to express the importance we attach to obtaining, in every speed determination, distinct evidence of all three periods. It is only by so doing that we can be quite certain as to the position of the correct period. It would be quite possible for the higher densities in a series of under-exposure gradations to be mistaken for a portion of the correct period in the case of a high development factor—in fact, we have known this mistake to be made when, had there been evidence of all three periods, mistake would have been rendered impossible.

We generally have some idea whether the plate we are about to examine is a rapid or a slow one, and, after a little experience, it is easy to decide upon that range of exposures which will most probably yield evidence of the three periods; but should we, in the case of a plate of the speed of which we have no idea whatever, find that the exposures we have chosen yield a series of densities which leave room for doubt as to the position of the correct period, it will be necessary to make another determination, a more suitable range of exposures being chosen. The first determination will indicate whether a longer or a shorter exposure be desirable.

We must here call attention to a difficulty which may possibly arise; but its occurrence is fortunately so rare as to speak well for the perfection of the machinery used for coating the plates. If, on plotting the densities, they are found to lie irregularly, so as to preclude the possibility of drawing through them a regular curve, there is serious reason to suspect an unevenly coated plate. In such a case as this, the best thing to do is to cut another strip from the plate from which the first was taken, and running in the same direction of the plate as the first strip. The second strip should now be uniformly exposed to the candle, and developed; the exposure and development being so timed as to produce an easily measurable density of, say, 1·0. If the plate have been unevenly coated, the density of the second strip, when measured in different places, will be found to vary. As an example, we have been able to lay our hands upon the record of a case which occurred in our own experience. The irregular series of densities obtained in the first instance led us to make a second exposure as described, when we found that the density measured in different parts of the strip varied from 1·335 to 0·820. When we remember that this means that one part of the strip transmitted more than three times as much light as another, the serious nature of such a fault as inequality in the thickness of the film will be apparent.

Reference has been made several times to the development factor. It is beyond the scope of this paper, however, to enter fully into this subject; but, as the numerical value of this factor is one of the data to be derived from every speed determination, we will state how it is graphically ascertained. From the point 100 on the inertia scale of the skeleton diagram, a line, parallel to the straight portion of the characteristic curve, is projected till it intersects the development factor scale. The point of intersection gives the factor which expresses the extent to which the development of this particular plate was carried. It is best for the purpose of speed determination to aim at reaching a development factor of 1·0, or a little more. It will be seen, on referring to diagram No. 1, that the development factors of the two plates, A and B, are 1·18 and 1·52 respectively.

We believe we have now explained the method of making a speed determination in sufficient detail to enable an amateur to carry out the operation. We trust, however, that any amateurs who take the matter up will not content themselves with plotting the characteristic curve of a plate for the sole purpose of ascertaining its speed, but will take an interest in tracing, in the conformation of the curve, results which they obtain in their photographic practice. It is a knowledge of this curve alone which can give the photographer complete control of the materials he employs. On some other occasion we hope to show more fully than heretofore the part which the characteristic curve plays in the calculation of the exposure for transparencies and printing processes generally, as also in the production of negatives and positives having a special range of gradation.

A Holiday on the Usk.

By H. G. Hammond Spencer.

Leaving Jersey at 8.30 a.m. (*via* Weymouth), Hereford is reached in the evening, too late to get on to Brecon the same night. The following morning, leaving by an early train, Brecon is reached about mid-day, with the sun shining brightly, which enables one to obtain a capital idea of the general appearance of the country under favourable conditions, and one is not long in finding out that one has dropped in for the right sort of thing, from a photographic point of view. The Usk winding round in the valley, with its wooded slopes, and the "Beacons" (about 2,000 ft. high) in the distance, gave promise of finding ample material to work upon. I lost no time in getting to work, for the same afternoon as I arrived I was driving about the country behind one of the sturdy ponies bred on the Beacons, and I was able to sketch out my programme for the next few days. Brecon itself has nothing very particular to recommend itself to the photographer, although the old Priory church is a fine one, but, in the summer at least, it is difficult to get a good view of it. Of the old castle there remains but a very small portion, and it is spoilt by the modern houses about it. I, however, got one good negative of it, in which the modern does not obtrude

itself. I also got one of the bridges over the Usk from below, with the castle in the distance, which makes a pretty view. The place to which all strangers are sent is about one and a half miles from Brecon, viz., Ffrwdgrech (pronounced Froodgraich), which is really a charming spot; a rushing stream in a ravine, the sides of which are thickly wooded, and with several very picturesque waterfalls, will give anyone a very satisfactory morning's work. This seems to be the great picnicking ground for Brecon. Unfortunately, when I was there in the beginning of August, the rocks were very much there, but the water to a great extent wanting, which spoilt the appearance of the falls, which must be really lovely in a favourable season, when there is no lack of water. This want of sufficient water I found also to be very trying when I came to taking views on the Usk, as the past season was an exceptionally dry one, and the river was lower than had been the case for years past. When I came to beginning serious work I found that there were so many beautiful parts round Brecon that the only difficulty was to make up one's mind where to go. I had only a fortnight before me, and that was not sufficient, for I am sure that I could have found ample employment for two months. Not only are there a succession of lovely views on the river, but the numerous tributaries present an endless number of "bits"; the only drawback being that the position of most of them seems to oblige one to face the light. Brecon forms an excellent centre from which one can work in all directions. The Midland Railway runs about east and west, and there are dozens of eligible places to visit, if one has the time, which I had not. I went, however, westward to Colbren, where I got a negative of some falls, about eighty feet high, and afterwards walked to Craigynos, where Madame Patti has her castle. Close to this I got a very pretty bit. The stream comes rushing out of the foot of a mountain, arched in by bushes. It is supposed to come from a lake at about two miles distance, but no one seems to know exactly its origin. Anyhow, it finds its own way through the mountain, and at its exit it is a real torrent, where I and my camera were balanced on a boulder in mid-stream, running a very serious risk of a cold bath, as the rocks in these mountain streams are extremely slippery.

Eastward of Brecon I went to Talybont, and found the river at Llangynider lovely. The limits of space will not permit of my describing all I saw. It will suffice to say that I can heartily recommend any brother amateur to visit Brecon and its neighbourhood. Arriving, as I did, from the somewhat relaxing climate of Jersey, the bracing air worked wonders on me. During the whole of my visit I never knew what fatigue was, although I was tramping up and down all day, and I certainly came home ten years younger than when I left. As I have the misfortune to be rapidly falling into "the sere and yellow leaf," this was, in itself, a considerable gain. Add to this the lovely scenery of all kinds, and surely one could not fail to pass a pleasant holiday. I myself have spent many years in different countries, but, after my trip to South Wales, I came to the decided conclusion, that it is by no means necessary to go abroad to meet with fine scenery, and that, in many respects, such as comfort, etc., one would do far better to wander in one's own country. Of course, in South Wales one does not find the grandeur of the Alps, but in simple loveliness I think its scenery would be hard to beat. After a most enjoyable fortnight I returned to Jersey (*via* Newport), by the Brecon and Merthyr Railway, which passes through a beautiful country, in some places seriously marred by the chimneys and smoke of the collieries and iron works, but which, nevertheless, would, I feel sure, afford plenty of employment to a serious worker in photography.

Societies' Notes.

MR. C. N. FRITH, the Hon. Secretary, Harringay and Finsbury Park Photographic Society, has successfully passed the City and Guilds of London Institute Examinations in Photography.

THE Bristol and West of England Amateur Photographic Association will hold the Triennial International Exhibition in the Galleries of the Academy of Arts, Queen's Road, Clifton, Bristol, which will be opened on Monday, December 18th, 1893, continuing open till Monday, January 22nd, 1894.

Medals.—The following is a list of the medals which will be offered for the best and second best pictures in the various classes, and to be awarded by a committee of five judges—four being well-known photographers, and one an eminent painter, three of the judges not being members of the association:—1. A gold medal for the picture or series of pictures having already received an award at any previous exhibition, and which, in the opinion of the judges, possesses the highest degree of merit, irrespective of size or subject. 2. One silver and one bronze medal for the best and second best landscape or series of landscapes; of 8½ by 6½ or over. 3. One silver and one bronze medal for the best and second best landscape or series of landscapes under 8½ by 6½. 4. One silver and one bronze medal for the best and second best picture or series of pictures of marine subjects, of 8½ by 6½, or over. 5. One silver and one bronze medal for the best and second best pictures or series of pictures of marine subjects, of 8½ by 6½ or under. 6. A silver medal for the best instantaneous picture or series of pictures, other than marine subjects, of 6½ by 4¾ and over. 7. A silver medal for the best instantaneous picture or series of pictures, other than marine subjects, less than 6½ by 4¾. 8. One silver and one bronze medal for the best and second best interior or series of interiors. 9. One silver medal for the best picture or series of pictures of architectural subjects, other than interiors. 10. One silver and one bronze medal for the best and second best portrait or series of portraits, of 8½ by 6½ or under, taken direct. 11. One silver and one bronze medal for the best and second best portrait or series of portraits above 8½ by 6½, taken direct. 12. One silver and one bronze medal for the best and second best genre picture. 13. One silver and one bronze medal for the best and second best enlargement of any subject and by any process, provided both the original negative and enlargement be entirely the work of the exhibitor. An unframed mounted print from the original negative to accompany each exhibit. 14. A silver medal for the best transparency or series of transparencies above the size of lantern slides. 15. A silver medal for the best stereoscopic transparency or series of transparencies. 16. One silver and one bronze medal for the best and second best series of twelve lantern slides, by any process other than mechanical. Table frames will be provided. 17. One silver and one bronze medal will be placed at the disposal of the judges for any exhibit of micrographical, astronomical, or other scientific branches of photography. 18. One silver medal for the best picture or series of pictures of botanical subjects. 19. One silver medal for the best picture or series of pictures of zoological subjects. 20. One silver and one bronze medal for the series of pictures illustrative of local subjects, which may be considered most useful or interesting in connection with the photographic survey of the Bristol district, recently undertaken by the association. The exhibitors to provide a duplicate print in a permanent process to be retained by the association for the purposes of the survey collection. 21. Two silver and two bronze medals, to be awarded according to the discretion of the judges, for improved apparatus, materials, processes, or for any other meritorious productions.

Conditions.—An entrance fee of five shillings shall be paid by each exhibitor in competition, whose exhibits cover less than 20 square feet, and ten shillings by those whose exhibits cover more than 20 square feet. All pictures for competition (except as below stated) must be sent to the exhibition mounted and framed, with the artist's name, address, and price (if for sale) on the back. The titles of the subjects and process by which produced may be neatly affixed to the front of the pictures, but on no consideration will the name or address of the artist be permitted on the front. No pictures in Oxford frames will be admitted. Pictures from India and the Colonies may be sent by post, unmounted, and the Council will undertake to have them mounted at the cost of the exhibitor, the expenses of such work to be deducted from the proceeds of the sale of the pictures. The Council would, however, recommend exhibitors to send their pictures ready framed, according to their own tastes. All unmounted pictures must be delivered by November 1st, 1893. The most direct route from America is from New York by the "Dominion" and "City" Lines direct to Bristol, with which Companies special rates for exhibitors' packages have been made. The Council undertakes to unpack all exhibits, and to re-pack and return all those remaining unsold; all carriages must be prepaid by the exhibitor. Every possible care will be taken of the exhibits, but the Council will not hold itself liable for any accident or damage that may happen to the same, with the exception of loss by fire, which is specially provided for. The Council will undertake the sale of exhibited pictures at the usual commission of 10 per cent., but will not sell further copies. Photographs coloured by hand will be excluded from competition. No picture having previously gained an award will be admitted to competition, excepting in the Champion class. The Hanging Committee will reserve the power of rejecting any pictures; and the jury will be empowered to withhold any award when the exhibits, in any class, are not considered of sufficient merit. Each exhibitor must fill up the annexed form A, and forward it to the Hon. Secretary not later than November 1st, 1893. Form B to be forwarded as a letter of advice at the time of sending the exhibits. All communications must be addressed to the Hon. Secretary, F. Bligh Bond, 36, Corn Street, Bristol; and all pictures intended for exhibition must be sent, carriage paid, to arrive not later than December 1st, 1893, addressed The Hon. Secretary, International Photographic Exhibition, Academy of Arts, Clifton, Bristol

Societies' Meetings.

Bath.—On 22nd ult. the members responded to an invitation of the Very Rev. Monsignor Williams to visit Prior Park, and photograph within its picturesque precincts. The day was remarkably suitable and work was diligently pursued until the hour appointed for tea, when the host regaled his visitors with a sumptuous repast, served under the grand portico of the mansion. Long remembered will be the outing of Saturday as in every way enjoyable to the ardent photographer.

East London.—At the general meeting held on 25th ult., Mr. Stone in the chair, Mr. J. Page was elected a member. A question from the box was read:—"What is the best method for obtaining cloud negatives—stop, exposure, plate, etc.?" The Chairman said that stop *f*/8, with an Imperial plate and an instantaneous shutter exposure, would be about right. Several members disagreed with this. Mr. Uffendell said he considered that the exposure at *f*/8 would be too long, and thought that a much smaller stop, say *f*/32, should be used. Mr. Bennett also admired the use of a medium stop, rapid exposure, and rapid plate. A special excursion was fixed for Bank Holiday to Rye House and Roydon, Mr. C. Tylee acting as guide. Members intending to be present should communicate with the Hon. Sec. The AMATEUR PHOTOGRAPHER Competition Prints were then examined and criticised by the members, who noticed the tendency of competitors to copy some style which happened to be "fashionable" at the time of sending in, instead of relying on their own originality. Members' work shown by Messrs. H. C. Gould, un., W. R. Gould, and A. Copping.

Hackney.—On 25th ult., Mr. W. Houghton in the chair, members work was shown from Messrs. Beckett, Guest, Nunn, and Roofe. Questions by Mr. Fort, "What is the best varnish for films?" Reply—Messrs. B. J. Edwards and Co. supply a good one; use cold. Mr. Hensler asked, "Should one aim at softness or contrast in statuary?" Reply—Softness; study the lighting. A dark background is generally used, because it will permit of more contrast. The range of tone should show relief. Mr. Selfe showed a print in which the sun was solarised, and a second reflection from one of the surfaces of the lens appeared over the foreground of the print, which was weak enough to escape reversal. Mr. Morgan then read a paper on Messrs. Hauff's Metol and Glycin. He said the class of work which suits Amidol will also suit Metol. The chief difference is that Amidol requires no alkali; Metol will tolerate almost any amount; preferably pot. carb. For bromide papers Metol with 3 parts of their A developer to 1 part of B will give as good results as the best ferrous-oxalate ones in half the time and with half the exposure. Experiments were made under same circumstances. Thirty seconds proved correct for ferrous-oxalate, whilst only 15 sec. for Metol. Afterwards seven half-plate negatives were developed in the same 2 oz. of Metol developer, and no difference in density could be detected amongst them. Metol will keep indefinitely; but only half the exposure necessary for pyro is sufficient for Metol. This is essential. A plate was developed with Metol; in 8 sec. the image flashed up strongly at once, but development was continued till dense enough without fear of fog. Over-exposure gives flatness. Negatives and prints were shown; one 3 sec. with pyro, against 1½ sec. with Metol. The pyro one was hard, and the Metol one soft. The peculiar speciality for Glycin is for black and white line subjects; it must be used in very dilute form, and its action is nearly automatic, as time will bring varied exposures to full density without its going beyond. For hand-camera work either time or stop can be reduced to half. Generally develop a little deeper than that for pyro, as it prints quicker, because there is no stain, and it loses little in fixing. Warm tones can be obtained by development, but it takes too long. Either Amidol, Metol or Glycin developed plates can be toned, intensified, or reduced as others. Amidol will stand forcing better than Metol.

Hexham.—The fourth outdoor meeting of the season was held at Bywell on 29th ult. The party proceeded from Stocksfield Station over Bywell Bridge, which was much admired, to the famous Bywell Castle, which makes a fine subject. The old churches of St. Peter's and St. Andrew's were next visited, their architecture making some beautiful pictures. The weather was very dull and rainy at first, but soon cleared up and the lighting became excellent, so some good results are expected.

Liverpool A.P.A.—The monthly meeting was held on Thursday, 27th ult. In the unavoidable absence of the President, Mr. Wm. Tomkinson was voted to the chair. The following gentlemen were elected members of the Association, viz., Mr. Thos. A. Collinson, Rev. J. Farnworth Anderson, and Mr. Edward R. Dibdin. The chairman gave a report of the excursion to Shrewsbury and Much Wenlock, which took place on Saturday, 22nd inst., under the leadership of Messrs. Gottlieb, of Shrewsbury, and Paul Lange. The revised rules for the annual competition were passed. Mr. J. A. Sinclair (Messrs. Adams and Co., Charing Cross-road, London) was then called on to show the latest photographic specialities and novelities, including the "1894" Adam's camera, with swing back and rising front, the Ideal cameras, ordinary and twin lens, "lightning" stand, pantoscopes, aluminium view meter, "adjustable" shutters, club cameras in brass and aluminium, etc.

North Middlesex.—On 24th ult. Mr. G. C. Gill read a paper entitled "Notes on Printing." He confined himself solely to the practical side, ignoring the historical and theoretical. He dealt with the ordinary silver albumenised print, which he said was being ousted by the gelatino-chloride, which gave finer and more permanent results and was equally economical. He advised that Solio paper, notwithstanding the directions of the company, should not be printed in direct sun; he found the sun shining on to a blind was a capital light to print by, and where printing was done in the open to be done in the shade in a north light. He showed a great number of specimens, principally of portraiture, on this paper, which gave splendid results. For portraits he recommended the mauve shade. Dealing with platinum he demonstrated the development of the cold-bath process, the ease of working which was generally acknowledged. He gave hints as to vignetting, showing masks made of zinc with serrated openings, which he said were more useful than those made from any other material, it being very pliable, and thus allowed the opening to be enlarged or otherwise with the greatest facility. An interesting discussion followed. Mr. H. Smith took first place for pictures at the London Colney outing.

Y.M.C.A., Southampton.—The members of the above club paid a visit to the beautiful grounds of Red Lodge, near Southampton, on 17th ult. At the invitation of Mr. W. H. Rogers, J.P., a number of plates were exposed in various parts of the grounds, and the results are to be presented to Mr. and Mrs. W. Knight, who are shortly leaving England for Texas.

Walsall.—The first exhibition of members' work took place on 25th ult., and was a great success. Over 250 pictures were sent in, and some of them were of an exceptional order of merit. The work of the beginners was especially deserving of praise, and showed remarkable progress. A second exhibition will take place in October, and prizes are offered for the best results of the excursions. This society, which only started in November last, now numbers about sixty-five members.

SOCIETIES' FIXTURES.

Aug. 4—LEWISHAM.—General Discussion.
" 5—OLDHAM.—Ramble to Speke for Speke Hall.
" 5—LINCOLN (Camera Club).—Excursion to Nocton Park.
" 5—LEYTONSTONE (Camera Club).—Open Social Evening at Headquarters, 8 o'clock.
" 5—BRISTOL (Camera Society).—Excursion to Avonmouth.
" 5—WEST KENT.—Excursion Up River; Leader, Mr. G. F. C. Grant.
" 5—WEST LONDON.—Excursion to Stanmore.
" 5—PAISLEY.—Excursion to Dalzell Policies.
" 5—ROCHDALE.—Excursion to Gorpley Valley and Dalesgate.
" 5—BOLTON.—Excursion to Alderley.
" 7—BIRMINGHAM PHOTOGRAPHERS' UNION.—Excursion.
" 7—S. LONDON.—Excursion to Pangbourne.
" 7—PHOTOGRAPHIC CLUB.—Excursion to High Wycombe.
" 7—EASTBOURNE.—Excursion to Newhaven.
" 7—RICHMOND (Camera Club).—Excursion to Oxted.
" 7—N. PHOTOGRAPHIC AND SCIENTIFIC ASSOCIATION.—Excursion to Burnham Beeches and Stoke Pogis.
" 7—GOSPORT.—Excursion to Arundel.
" 7—LEYTONSTONE.—Excursion to Burnham-on-the-Crouch.
" 7—LINCOLN (Camera Club).—Excursion to Clumber House.
" 8—FAIRFIELD (Camera Club).—A Practical Demonstration and Lecture on "Metol-Hauff and Glycin-Hauff," by Mr. L. Morgan (representative of Messrs. Fuerst Bros., London).
" 8—E. LONDON.—"On the Desirability of Suiting the Printing Process to the Negative," with illustrations, by Mr. Bennett.
" 9—BIRMINGHAM PHOTOGRAPHERS' UNION.—Exhibition of Members' Work.
" 9—S. LONDON.—"The Chemical Action of Intensification,' with experiments, Mr. Maurice Howell.
" 9—PHOTOGRAPHIC CLUB.—Members' Open Night.
" 10—LEICESTER AND LEICESTERSHIRE.—Excursion to Chesterfield and Bolsover.
" 12—HUDDERSFIELD.—Ramble to Morton Wood, Boshaw.
" 12—BRISTOL (Camera Society).—Excursion to Sipton Court and Church.
" 12—S. LONDON.—Excursion to Surrey Commercial Docks.
" 12—MANCHESTER.—Ramble to Warburton.

To Correspondents.

All communications for these columns are to be addressed to **The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.**

RULES.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES.

6141. **Llandudno.**—Should be glad of any information respecting above place. Places of interest, dark-room, etc.—A. R. A.

6142. **Developer.**—Should be glad to know cause of No. 1 solution of hydroquinone developer not keeping its colour, but turning brown, like stale pyro. The developer I mix myself, according to Ilford formulæ. —A. R. A.

6143. **Darkening Frames.**—Can any reader oblige me with a formula or any preparation that will stain oak frames so as to resemble walnut?—ENZANCEP.

6144. **Bangor.**—Can anyone kindly inform me if there is a dark-room for changing plates at Bangor, and the charge for use?—J. KENTISH.

6145. **Grindelwald.**—Can photographic plates be bought at Grindelwald?—C. N. P.

6146. **Toning Bath.** — How much precipitated chalk should be put into a 10 oz. acetate of soda toning bath?—NOVICE.

6147. **Focal Length of Lens.**—Will some kindly assist and enlighten me. I have tried to obtain the focal length of my half-plate French lens, as set out in the "Ilford Manual," and make it only 2½ in.; but when trying to focus for copying same size as object (carte-photo), by placing lens 4½ in. from the ground-glass and 4½ in. from object, I can only see a confused mass; but if I get back 3 ft. it can be focussed sharply, but decreases the size. Does not the focal length seem short? I may add I could not get the image of the sun on to the vertical card without raising the lens, which I did some 3 in., keeping it horizontal.

6148. **Hydroquinone.**—Will any reader oblige by giving me formulæ of hydroquinone developer (two solutions) for bromide paper?—L. C.

ANSWERS.

6136. **Changing Bag.**—I should think the following would meet "Alfred Elce's" requirements, namely, to take a piece of black silesia (double thickness), and make a bag 3 ft. long by 2 ft. wide, stitching a piece of tape around the open end to enable it to be drawn together. Then cut a piece 6 in. square from one of the sides, and insert a piece of ruby medium. To change, put the bag over your head and draw the tape lightly around your waist the slide and the plates having been previously placed inside.—D. H. W. PREEDY.

6139. **Folkestone.**—Mr. G. A. Savage, 22, Church Street, and T. M. Braund, 9, Church Street, both have dark-rooms. "Burrows" will be able to obtain Ilford plates from the South-Eastern Drug Co., 26, Sandgate Road.—D. W. H. PREEDY.

6139. **Folkestone.**—Mr. G. A. Savage, of 22, Church Street, Folkestone, kindly places his dark-room and utensils at the disposal of amateurs at any time, and informs us that Ilford plates may be had close by.—THE EDITOR.

6139. **Folkestone.** — There is a dark-room for amateurs' use, free of charge, for plate changing, in Church Street, which is a short street turning off the left of the Upper Sandgate Road, and close to the old church. Marion's are the only plates kept there, but Ilfords can be obtained at a photographer's close to Mr. Lea's the chemist, in Tontine Street. If you wish to develop while away you will find another photographer advertising a dark-room a little way beyond the first mentioned at the side of the churchyard on the right. You have to use your own chemicals though. Folkestone is a splendid place for photography, but care must be taken not to over-expose, as the light is very brilliant indeed.—JAMES KENTISH.

6140. **Hard Negative.**—Immerse the negative to be reduced in a solution of hyposulphite of soda (5 oz. to pint) till the film is soft. Then remove it, and add to the soda solution a few drops of a saturated solution of ferricyanide of potassium (*red* prussiate of potash); replace the negative, when a rapid reduction will take place.—P. HARRISON.

QUERIES UNANSWERED.

June 2.—Nos. 6102.
,, 9.—Nos. 6106, 6108.
,, 16.—Nos. 6109, 6110, 6111, 6112, 6113.
,, 23.—Nos. 6115, 6116.
,, 30.—Nos. 6118, 6119, 6120, 6121, 6123.
July 7.—No. 6128.
,, 21.—Nos. 6131, 6133, 6134, 6135.
,, 28.—No. 6138.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

KROC.—(1) It is almost impossible to say which is the best, as there never has been any real test, but if the water is drawn off from the bottom, it is not always necessary to have a perforated bottom. (2) The dark spot at the top proves that the source of light is too low; raise it slightly, and then by trying you will easily find the correct position for the lamp, and the dark spot will disappear.

ZINCOP.—(1) Good, but printed a little too deep. (2) The dark branches are a little obtrusive, and the figures too dark. (3) Over-printed, or the negative wants intensifying, otherwise good. (4) Good. (5) With an evening sky this would be a very good effect. (6 and 7) Both good.

J. MAURICE JONES.—Many thanks for article, which we will utilise. We should certainly be glad of notes of your district.

M. A. WILKINSON.—Thanks, we will use next week.

KROC.—You certainly get a negative in the way you describe, but the grain of the paper will show. About ten to twenty seconds, at a distance of three feet, would be about right with a Phœnix plate.

T. W. H.—(1) You can precipitate your gold by acidifying with hydrochloric acid, and boiling with solution of sulphate of iron, collecting and washing the precipitate, and redissolving in nitrohydrochloric acid. (2) The articles appeared December 2nd and 16th, 1892, which our publishers have sent on to you. (3) The phosphorescence is an occasional appearance which is not easily explained, but it will not fog a negative. (4) There is no work on the subject of clouds, from a pictorial point of view, though numerous articles have been written on them. (5) We should say the negative would be properly washed if it was placed film downwards, otherwise it would require double as long.

C. E. F.—Dilute your ammonia as soon as you purchase it, and it will then keep much better. Why not do, as many others are doing, that is, replace ammonia with soda?

TRIX.—Your photographic friend might have kept his knowledge to himself, or else modified his statement; nitrate of lead is not more dangerous than pyro, chloride of gold, and a host of other chemicals you use. Almost any silver paper will do to saturate the bath. (1) The deposit need not be taken into account; merely pour off the clear solution when you want to tone again. (2) If the full aperture will give you sharply defined features, then use it; if not, stop down to *f*/11, and with no sun in the middle of the day, and Ilford ordinary plate, give four seconds' exposure. (3) You need not trouble yourself about a few grains one way or the other, the more boxax there is, the more alkaline the bath, the quicker it tones, and the quicker it spoils. (4) Your gold is probably precipitated. You should not neutralise the stock solution of gold, only neutralise it just before you want it. The best thing you can do is to use it up as quickly as possible, or else put it into a clean porcelain evaporating dish, and boil down till you get the bulk down to about ½ oz., and then add some aquâ regia and boil, and when the solution is clear, dilute again.

P. M.—(1) The lens was the precursor of the R.R. (2) It is quite as useful as the R.R. (3) It is suitable for copying (4) and for enlarging. (5) List price not known, (6) nor second-hand value. (7) Works at *f*/11, we think. (8) An old lens. (9) You might get a worse lens and might get a better; it is certainly capable of doing good work.

A. SWIFT.—Our publishers will send you a copy for 2s. 9d.

W. B. HELLON.—The articles appeared May 24th, 1889, and March 27th, 1891.

H. HARRIS.—Many thanks; we wish a few more would follow your example.

ASHTON.—Hume's Cantilever enlarging apparatus is thus arranged.

G. N. P.—We have no information about Grindelwald. M. J. Maurer, of Hotel Beau-Rivage, Interlaken, has a dark-room, and Ilford plates can be obtained by post from E. Baud, 11, Rue Verdaine, Geneva. Exposed plates will travel safely by parcel-post if labelled outside. Sixteen inches or a telephoto lens would be best. Try Wray, Swift, or Taylor, Taylor and Hobson. You might get one second-hand from The City Sale and Exchange Rooms, 53, Lime Street, or Sands and Hunter, Cranbourne Street, or Vevers, of Leeds.

W. BRAITHWAITE.—Negative received safely; we have forwarded to a good man. Our prize prints are out on loan at present, please write again in a fortnight's time.

E. Z. M.—We have forwarded your letter.

G. P. MOON.—All your negatives are fogged in developing. Measure out your pyro and bromide, dilute with water, and add one-fourth of the quantity of alkali recommended by the makers; rock the dish and allow the development to proceed as far as it will, then add another quantity of alkali and let this act for a short time, and then add a third quantity and finally the fourth; by this means you will probably get better results. Try, and let us know how you get on.

ADA.—(1) Over-exposed and spoilt by the halation in trees and top of cottage; nothing can improve this now. You might trim at least two inches off foreground. (2) Halation is again present here, and the little bit of the tree is obtrusive on the right. (3) Spoilt by printing in the sun. Wants a sky to improve it. (4) Cut half an inch off foreground, two inches off left side, and three inches off the sky. (5) Spoilt by printing in the sun, and wants clouds. (6) More sun printing; cut two inches off the foreground and you will have a good thing which would be improved by clouds. (7) Cut an inch off foreground and an inch off sky. You give us no information as to how you work, what plates, developer, etc., you are using; let us know this and we may be able to help. Over-exposure and wrong development strikes us as being your fault.

H. PARKER.—Both your slides are very much stained with pyro. No. 1 is insufficiently developed. No. 2 is all right for density, but both are a hideous tone. Try the developer recommended by the makers, and see if you cannot get a better colour, and let us see some more work presently.

A. H. GARNER.—Yellow prussiate of potash is not a restrainer; it is a weak alkali; if you wish to try it, add an equal quantity to the Ilford carbonate formula.

H. W. B. BRUNO.—Many thanks, but we have already printed some criticisms.

R. R BARRETT.—The light would be about one-third brighter. The relative speeds of plates are photomechanical 4, iso medium 25; therefore the former will require six times the exposure of latter. You might get such a finder as you want from Perken, Son, and Rayment. Plymouth is a splendid centre for work, and we enjoyed our brief holiday very much indeed, and did some good work too.

E. ARMBRECHT, JUN.—Amidol, 4 gr.; sodium sulphite, 20 gr.; water, 1 oz.; bromide of potash, 1 gr. Use 10 per cent. solution of acetic acid as a restrainer. The speed of the two papers is practically the same. See this issue for supplement.

H. P.—A concave lens may be used for a view finder, but the image will be upside down. By placing a rectangular aperture in front of the lens you can limit the amount of subject included, and it is merely a matter of trial, because you need not place the eye close to the mirror or ground-glass. A view-finder of the ordinary kind is merely a small camera with a mirror at an angle of 45 deg. to reflect the image on to the ground-glass, and by limiting the size of the ground-glass you can limit your view to that thrown by the lens of a big camera. We do not quite see where your difficulty comes in; if you want a finder which will show exactly the same size image you must use, of course, a duplicate lens.

G. W. CLOSE.—

Sandarac	1 oz.
Castor oil	80 drops.
Alcohol	6 oz.

Dissolve the sandarac, add the oil and filter, or allow to settle, and decant.

H. W.—We can trace no letter from you. Write again.

SECOND-HAND CAMERAS AND LENSES, etc. The best place to buy Second-hand Photographic Apparatus is SANDS, HUNTER, & CO., 20, Cranbourn Street, Leicester Square, London, W.C. who only deal in reliable and best quality apparatus. Approval allowed on all goods, with deposit. Cameras and Lenses, by good makers, bought for cash or exchanged, also let out on hire. Send for Catalogue, gratis and post-free. *Please quote this Advertisement.*

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 462. Vol. XVIII.] FRIDAY, AUGUST 11, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—"Photography at Home" Competition Awards—The August Holiday—Our Trip—Dr. Nansen and the Frena—A Correction—Photographing the Photographer—Taylor, Taylor, and Hobson's Trade Mark—Second-Hand Notice.

Flotsam and Jetsam, by Anchorite.

Letters.—A National Photographic Gallery (Bradburn).

Articles.—Photographic Procedure (Wall)—Photographic Chemistry (Conrad)—On the Amount of Silver and Hypo in Paper (Grundy and Haddon).

Apparatus.—Marion's Negative Holders.

Holiday Resorts.—In Kirkcudbrightshire—A Trip to Taffyland—Ma Chere Ville d'Alger.

The Photographic Convention—Our Pictorial Failures.

Societies' Meetings.—Ashton—Brixton—Northern—Rotherham—Sheffield.

Societies' Fixtures.

Index to Vol. XVII.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

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Out of Postal Union ..	,, ,, 7s. 9d.	,, ,,	15s. 9d.

TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 51, Seascape and River Scenery.—Latest day, August 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, September 1st, 1893.)

Our judges have presented us with their report on our "Photography at Home" Competition. The prints were numbered, and the numbered entry forms kept in our possession, so that there was no possibility of any competitor being known. We find that the following are the winners:—

Gold Medal	J. Hall-Edwards.
First Silver Medal	J. O. Arnold.
Second Silver Medal	Cecil Gethen.
Extra Silver Medal	A. W. Chant.
First Bronze Medal	Andrew Peddie.
Second Bronze Medal ..	G. A. Carruthers.
Certificate	G. A. Savage.
Certificate	F. Harman Orr.

We may state that we have carefully looked through the prints, and regret that the majority of the work is certainly not up to our usual standard. The judges have withheld one gold medal, and awarded an extra silver. The method of judging was as follows: The prints of each set were looked through, and the sets thus divided into three classes, the first which ought to be carefully considered, the second doubtful and the third entirely without any chance. The first two lots were then carefully considered again and divided again into three classes, and from the first lot the winning sets were chosen.

Working in this way, we find that the following were thrown out in the first round:—

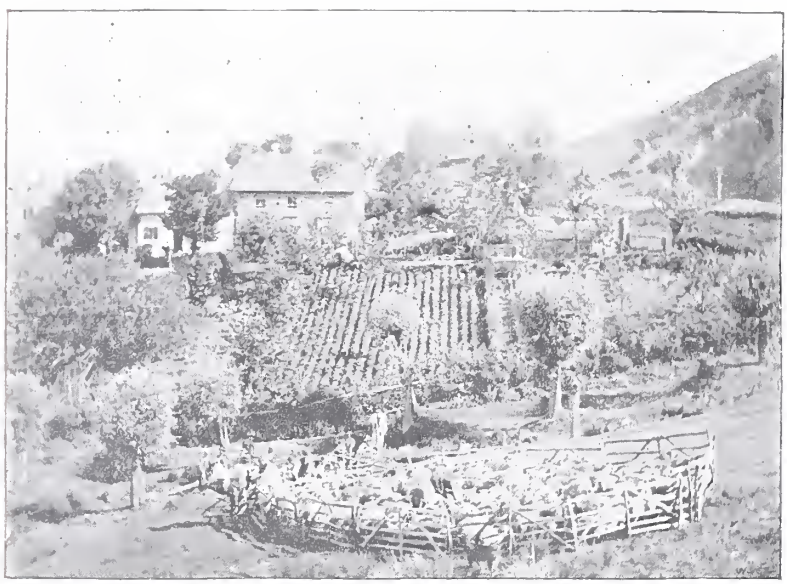
A. W. Flower, London, N.W.
Henry Hollamby, Northumberland.
J. Appleby, Bootle, near Liverpool.
Rev. R. J. Pearce, Durham.
E. P. Vulliamy, Glasbury R.S.O.
T. Hugate, York.
E. Mears, Brandon.
William Elliott, Tottenham.
S. B. Percy, London, W.
James Gray, Glasgow.
Henry Gascoigne, London, W.
J. Theodore Hunt, County Waterford.
Miss Harman, Peckham Rye.
Lawrence K. Times, London, W.
D. O. Roberts, London, S.W.
Wm. Walker, Nottingham.
James Fletcher, Philadelphia.

The remaining sets were then kindly arranged by the judges in the following order of merit:—

1. Alfred H. Wood, Darlington.
2. Mrs. Henry Bowles, London, S.W.

3. J. A. Forret, Edinburgh.
4. Frederic de Paula, Hendon, N.W.
5. A. H. Sexton, Glasgow.
6. C. F. Archer, Clapham.
7. Miss Elkington, Wolverley, near Kidderminster.
8. Alfred Stieglitz, New York.
9. "Akarana" (H. R. Arthur), Auckland.
10. Samuel L. Coulthurst, Manchester.
11. Mrs. Thorburn, Scotland.
12. Mrs. L. Grant Watson, Godalming.
13. H. Noel Malan, Epsom.
14. Henry J. Fulljames, Wimbledon.

FROM this our competitors will be able to give some idea of where they were placed. Too many spoilt their chances by making up their sets with inferior prints, thus handicapping themselves very much. It is far better to send in only six good prints than a set of twelve of both good and bad. We hope to be able to reproduce some of the winning photographs, with comments on the general competition.



"Sheep Washing on the Malvern Hills."—*Taken with a Cylox Hand-camera.*

WE have been favoured with magnificent weather during the recent August Holiday, Monday being exceptionally brilliant, and doubtless many of our readers took advantage of the opportunity to do some good work.

WE took the opportunity to do a little, and have tried what is practically almost unknown country, we believe, for the photographer. And, judging from what we saw, we should say it is an exceptionally rich field. We hope to commence next week a brief account of our tour, and shall reproduce a map and one or two results—we had almost said shots, but we were afraid it might be supposed that we used a hand-camera, and this was not so, as our arms and back can even yet testify.

To carry a whole-plate kit with six double dark slides, a battery of five lenses and plates, about twenty-five miles on a hot day is not conducive to ease, though we feel sure if our exposed plates turn out correctly we shall not regret it. We have a record for three days of over fifty miles walking, and this with a kit weighing close on 40 lb.

WE noted last week that Dr. Nansen, the arctic explorer, was taking some Kodaks and films with him, and we learn that he has also taken three Frena hand-cameras and over 2,000 extra films, supplied by Messrs. R. and J. Beck. He will therefore have material for about 5,000 exposures, which, even if a proportion of only 60 per cent. turn out well, will be a valuable assistance to science.

IT is in such cases as this that the enormous advantages of dry-plate photography and films is apparent, as the weight and bulk of an equivalent area of glass would be no small consideration.

WE were caught tripping last week by two or three readers. We stated that Loch Shiel, which was the title of a certain print sent in to our competition, was in Ireland, but it turns out, so our correspondents state, to be between Argyllshire and Inverness. One correspondent kindly adds: "It was here Prince Charlie landed when he came on his ill-starred expedition to Scotland, and this monument was executed to commorate that event."

A CORRESPONDENT sends us a very good print of himself taken by himself in an ordinary room before a dressing table with an ordinary plate and an exposure of about ten seconds on a July evening in a north-east light, using a cap and not an instantaneous shutter. The result is very good and the method decidedly ingenious and useful for anyone who wishes to take his own portrait.

MESSRS. TAYLOR, TAYLOR, AND HOBSON, the well-known opticians of Leicester, have just registered a neat little trade-mark which will for the future be engraved on all their spirit levels, etc. It consists of the firm's initials, T. T. and H., upon a heart with a finely engine-turned ground, significant of their precision in mechanical practice, the whole being surrounded by a circle, the emblem of perfection, their aim.

MESSRS. TAYLOR inform us that they have received numerous complaints of instruments being sold as theirs which proved to be otherwise. Probably there are many lenses knocking about which bear the name of a reputable firm, which are not genuine. It is an old and well-known trick to replace the glasses of a good lens by inferior ones. Care should be taken always when purchasing second-hand apparatus to verify the truth of the statements as far as possible.

THERE is by no means a bad little story which we heard the other day, which is worth preserving. A wrathful photographer was complaining of pinholes in his plates to the maker, when he was asked what he developed them with. The answer was "iron, but not tintacks, my friend." Then there was a general laugh, and things went pleasanter after that.

Flotsam and Jetsam.

OUR readers must be used to competitions by this time—well seasoned, we should imagine. But what will they say to this? The *New York Recorder* has offered "a present of ten dollars"—that is the delicate American way of putting it—"to the person who sends to it the best amateur photograph of the summer girl." Isn't it rich? But that is not all. Hear the conditions. "This interesting damsel may be in any of her favourite haunts—by the sea, or the mountains, or the lake." So much for locality.

And now for dress. "She may be dressed in white, blue, red, or any colour that takes his fancy." Have the Yankees mastered colour-photography then? Going further still, the *Recorder* becomes almost rude, as thus: "She may be alone, accompanied by her latest moth, hovering close to her flickering flame" (American girls are not usually so feeble, at least those that come across the herring pond to marry our dukes), "or she may be surrounded by other summer girls."

Then the *Recorder* comes down to mere technical details. "There is no restriction as to the setting." "Prints may be in iron, silver, bromide, or in any other permanent style. They should be carefully mailed, addressed 'The Summer Girl Competition, care Sundry Editor, *N. Y. Recorder*, 15, Spruce-street.'" It's all in keeping, evidently. What entries for the Summer Girl Competition?

In a quaint little homily prefacing announcement of the competition we find cameras described as "amusing and instructive bits of mechanism to 'imprison' dainty bits of landscape, or perhaps some groups or single portraits." If only a Yankee journalist could be got to give a description of himself!

A high compliment was indirectly paid to photography in an article on "The Month's Illustrations," which appeared in the *Chronicle* the other day. The writer complained, and justly, that English illustrated journals were "far more zealous in the reproduction of paintings and photographs than in the use of original drawings." It is not our province to draw any inference in one direction, but it is obvious that the photographs must be of great excellence, or they would never be reproduced at all, much less at the expense of the artists in black and white.

It has been pointed out more than once in this column how fond literary critics are of photographic similes. A recent review, we noticed, contained the phrase "a characteristic example . . . of the impressionism which renders the actuality with the hard veracity of an instantaneous photograph." True, the writer afterwards hedges, "This is admirable photography, or rather phonography."

It would be far safer to take the alternative, and leave photography alone, if the similes are to be effective; for, as every photographer knows, "hard veracity" is by no means the characteristic quality of an instantaneous photograph. But there is a proverb about critics, and perhaps the poor man "didn't know, you know."

They are an enterprising folk up in the north, as witness, for one thing, their evening papers. Not even the smartest London journalism can better the productions of Liverpool and Glasgow and a few other towns "in the north countree." The *Glasgow Evening Times* every week devotes a column to photography, and very interesting and suggestive and helpful it is too, chiefly, of course, to amateurs and novices. But it also contains many items of more general and less technical import.

It announces now that in Glasgow the automatic photographic machine has reached a higher stage of development. It has been evolved into the twopence-in-the-slot stage, and from the description given of it there seems to be no doubt that full value is given for the extra penny. The money is put into one of two slots in the side of the machine, and the victim takes his stand on a platform in front of the machine. He then pulls down a shutter covering the lens aperture, and sees one of his pennies projecting from the other slot for a last fond adieu.

This penny he remorselessly pushes down through the slot, uncovering the lens by the action for the space of five seconds. Then he gets off and the machine does the rest. The developing and fixing go on inside the machine, all automatically, and in a very little while the photograph is delivered at the appointed opening and is framed and finished completely—all for twopence!

Anchorite.

Letters to the Editor.

A NATIONAL PHOTOGRAPHIC GALLERY.

Sir,—I believe the advisability of founding a photographic national gallery has on more than one occasion been discussed in the journals devoted to the art, but when will the suggestion be put into actual practice, and a permanent house found for the splendid work of our leaders? The various exhibitions that are held from time to time are undoubtedly of great educational value to the struggling amateur, but I for one am quite incapable of carrying away in the mind's eye all the lessons and hints the various pictures exhibited teach, and often in endeavouring to produce work of a higher and better standard of excellency than I have up to the present attained feel the loss, at the moment when it is required, of the work of master hands to study and compare and to some extent imitate.

Surely, considering the number of enthusiasts who practise the photographic art, many of whom are men of considerable means, it ought to be possible to establish an institution, accessible to the public at any part of the day, where high-class technical and pictorial photographs can be studied and valuable hints obtained on every class of subject.—I am, sir, yours faithfully,

A. H. Bradburn.

Photographic Procedure.

By E. J. Wall,

Author of "The Dictionary of Photography."

Section VIII.

INTENSIFICATION.

(*Continued from page* 431, *vol.* xvii.)

The different methods of intensification which we may use are numerous and are too often indiscriminately applied. The most general is by means of mercury perchloride or mercuric chloride followed by ammonia, but there are also numerous others in use. However, all the methods in which mercury is used require a stock solution which may be conveniently made as follows:—

Mercuric chloride	10 gr.
Hydrochloric acid	10 drops.
Water	1 oz.

Frequently potassium bromide or ammonium chloride is used instead of the acid, but Mr. Chapman Jones has pointed out, in a paper read before the P. S. G. B. (*A. P.*, Feb. 10th, 1893, p. 99), that hydrochloric acid is the best to use.

The negative must be quite free from hypo, and the best way of eliminating this is by copious washing followed by ten minutes' soaking in an acid alum bath, and then washing again. The negative may then be laid in the mercuric solution and bleached. When a negative only requires very slight intensification it need be only superficially bleached. Negatives which have been allowed to dry should be soaked in water till thoroughly wet and then bleached. Negatives which have been retouched and varnished must have the varnish removed, which may be done by successive soakings in methylated spirit.

Sometimes it is advisable to intensify fogged negatives; in such a case it is preferable to give the plates a slight reduction in ferric chloride solution or Belitzski's reducer, and refix and wash.

The bleached negative may be darkened by using sodium sulphite solution, and a saturated solution should be used. In this the white image takes a greyish-black colour.

Ammonia is used and a 10 per cent. solution acts quickly and well. It is absolutely essential to wash thoroughly after bleaching and before applying the ammonia, or else spots and stains will subsequently appear, and care should be taken that the negative is left long enough in the ammonia.

Chapman Jones states that the safest and most satisfactory method of intensification is by redeveloping the bleached image with ferrous-oxalate developer, the precautions necessary to observe being "to wash away the excess of mercuric chloride before using the ferrous oxalate," though if a little mercuric chloride be left in the film no harm will ensue, provided the ferrous-oxalate developer be applied in the dark-room or a dull light. And as this may be repeated over and over again, any degree of intensification may be obtained.

The potassio-cyanide of silver intensifier, so well known as Monckhoven's, but which was really suggested by H. J. Burton in the "Year Book of Photography," in 1873, six years before Monckhoven gave his formula, is also a great favourite, though again Mr. Chapman Jones states that this process is not reliable, and there are one or two difficulties which are not easy to overcome.

The negative is bleached in the ordinary way, washed well, and then blackened in the following solution:—

Potassium cyanide	20 gr.
Silver nitrate..	20 „
Distilled water	2 oz.

There should always be a white flocculent precipitate in this solution, and if there is not, more silver nitrate should be added till on shaking a permanent precipitate is formed. The negative quickly turns dark brownish-black in this solution, and it should not be allowed to remain too long, or the half-tones are attacked. The difficulties to be met with are that the negatives look denser when wet than when dry, the image is not absolutely stable, but may change afterwards in printing, and that unless thoroughly washed after blackening, the whole turns a bright red colour, and, as stated above, the half-tones may be reduced instead of intensified.

Another method but little used, and which from considerable experience I should say is not quite so easy of control, is that with cyanide of mercury. The bleached image is washed and then darkened in the following:—

Potassium cyanide	5 gr.
Potassium iodide	2½ „
Mercuric chloride	2½ „
Distilled water	2 oz.

In this the image turns bright yellow, and then gradually dark brown, and for veritable ghosts the action may be stopped at this point, and the negative well washed, but for ordinary work the resultant negative is too dense, and it should be left in the bath till it turns a lighter brown. The disadvantages are, that here again, as in the last process, the half-tones may be attacked, and also the action is somewhat unequal, my experience being that the solution cannot penetrate the high lights so readily as the other portions.

Edwards' method of iodide of mercury and hypo has found many adherents, although the results are by no means stable, and the image gradually becomes yellow. For this method, however, it is not absolutely essential to free the film from hypo, a mere superficial washing being all that is necessary. The intensifier is made as follows:

Mercuric chloride	4 gr.
Distilled water	½ oz.

Dissolve

Potassium iodide	12 gr.
Distilled water	1 dram.

Dissolve and add to the mercury solution. A bright red precipitate is formed, which should be immediately redissolved.

Hyposulphite of soda	8 gr.
Distilled water..	1 drm.

Dissolve and add to the above.

The negative gradually turns a fine brown-black. The stock solution gradually becomes thick, and deposits a precipitate, although the clear solution may still be used if thought desirable.

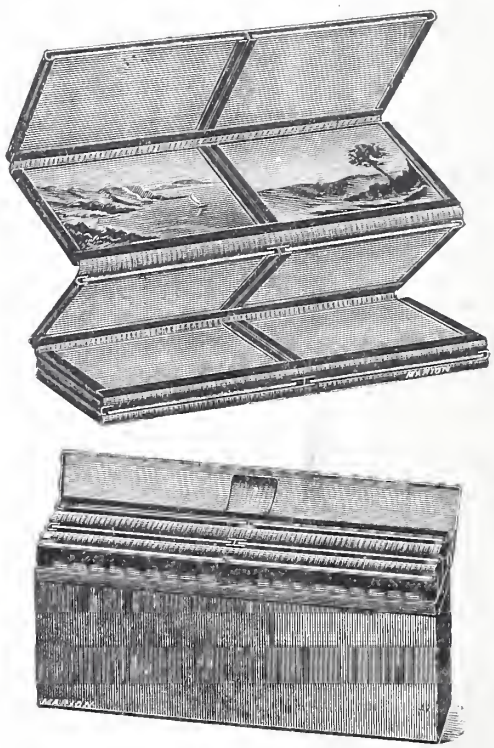
Practically, bleaching with mercury, and then redeveloping with ferrous oxalate, may be considered to be the safest and most satisfactory of all the mercurial intensifiers, and is the one that should be adopted.

(*To be continued.*)

Apparatus.

MARION'S NEGATIVE HOLDERS.

MARION AND CO., of 22 and 23, Soho-square, London, W., have sent us a sample of the above, which will certainly facilitate the storing of negatives. The holders are neat metal grooved-frames, hinged together with flexible joints, and so arranged that any negative may be easily inspected and withdrawn; the frames fold up, and are stored in a japanned metal case with hinged lid.



These holders are more compact and portable than grooved boxes, and the contents can be seen at a glance, thus avoiding the tedious and ofttimes troublesome job of lifting a lot of negatives out of the grooves. They will also be useful for showing negatives at society meetings. Prices for twelve quarter-plates 2s. 6d., for six half-plates 2s. 6d.

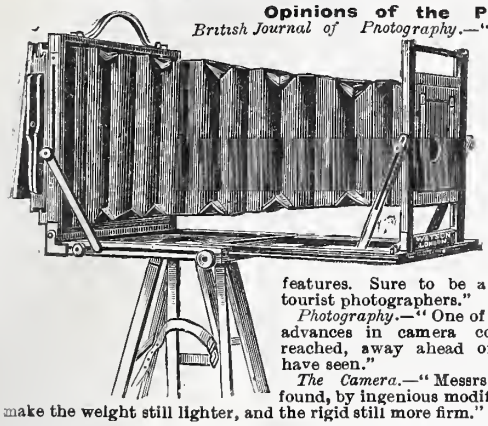
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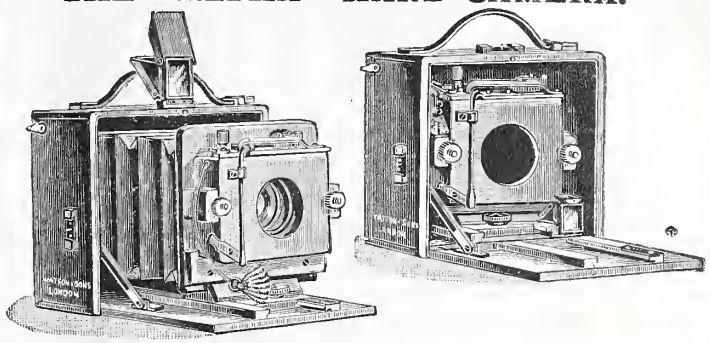
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Finder	0 10 6	0 10 6	0 10 6	Finder	0 10 6	0 10 6	0 16 6
Travelling Case ...	0 12 0	0 15 0	1 0 0	Travelling Case ...	0 7 6	0 9 6	0 12 6
	8 15 0	9 14 0	12 0 6		5 13 0	6 2 0	7 18 0

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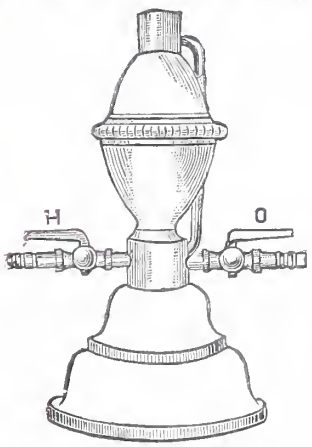
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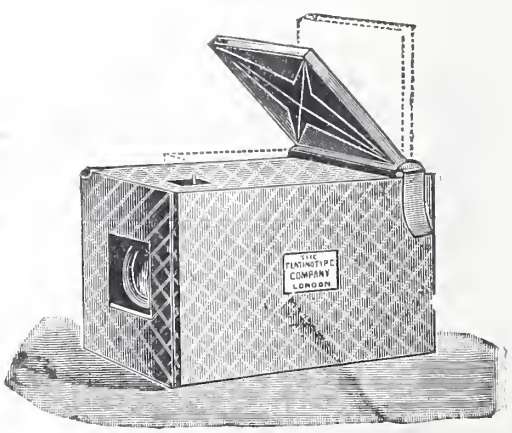
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General and Photographic Chemistry.—XIX.

By E. C. Conrad, F.C.S.

(*Continued from page* 14.)

DEVELOPMENT.

The chemical and physical changes that take place in the production of a photographic image are obscure, and before considering the various theories which have been advanced it will be as well to explain concisely the manufacture of a sensitive plate. Dismissing the consideration of the old *wet method*, in which the plate had to be prepared, exposed, and developed in a moist state, and by a series of operations following one another at short intervals, we will confine our remarks to the production and manipulation of the *dry-plate method*, now almost universal, and in which the manufacture of the plate and its subsequent treatment are quite distinct. In the preparation of the plate the requisites are a clean glass coated with an emulsion, consisting of a haloid salt of silver suspended in an organic medium such as gelatine, collodion, etc., and an entire absence of dust and white light. The emulsion is prepared by soaking gelatine in water, dissolving at a gentle heat, and then adding a solution of silver nitrate, afterwards gradually stirring in a corresponding amount of a solution of say potassium bromide; double decomposition takes place; Eq.: $AgNO_3 + KBr = AgBr + KNO_3$, the insoluble silver bromide remaining suspended in the gelatine, and the potassium nitrate and any excess of silver-nitrate removed by washing. A prepared plate exposed to the action of sunlight for only a fraction of a second, although apparently unaltered, will on the application of a developer be reduced, a deposit of metallic silver being formed, varying in density (if the exposure is correct and the development properly conducted) with the amount of light, the portion exposed to the strongest light having the heaviest, and the portion in shadow a very slight or entire absence of deposit. In considering the phenomena of development the factors involved are the various reactions of (1) an insoluble silver salt, (2) the organic substratum, (3) light, air, and moisture, (4) the developer itself, (5) the question of time, and strength of the various items; the whole making a very complicated subject and one that at present is not at all thoroughly understood. The action of light on the silver salt is considered by some authorities to be due to a chemical action only, while others consider the increased sensitiveness of the silver salt due to the action of the developer to be produced by an electrical or physical change.

The most important arguments against the action of light being purely chemical are, that there is no change of colour before and after exposure, but this may be due to the very minute quantity of salt acted on; that an increased exposure, instead of quickening development, does after a time render the salt less easily decomposed; that the phenomena of reversal and creeping do not lend themselves to a chemical explanation. A good deal has been written by authorities for and against the electrical and physical views, but the question cannot be considered as definitely settled on either hypothesis. Although the exact action of light is obscure it may be considered that the latent or undeveloped image consists of a sub-bromide of silver and the reaction with pyrogallol in the presence of ammonia may be explained by saying that the equilibrium of the compounds is destroyed by the oxidation of the pyrogallol resulting in the deposit of metallic silver and the formation of fresh sub-bromide, which in its turn is reduced, the reaction being continuous until either the pyrogallol or silver is exhausted. Eq.: $C_6H_6O_3 + 2NH_4HO + 2AgBr = C_6H_6O_4 + 2NH_4Br + Ag + H_2O$. A small amount of a solution of an alkaline bromide is usually added to the developing solution to restrain the action of the pyrogallol; it probably acts by combining with the sub-silver salt to form a compound only slowly reduced. The other organic developers act in much the same way. The action of ferrous oxalate can be expressed thus—Eq.: $3FeC_2O_4 + 2AgBr = Fe_2(C_2O_4)_3 + FeBr_2 + Ag_2$.

THE CARBOHYDRATES.

The compounds classed under this head contain six or twelve atoms of carbon united with oxygen and hydrogen in the proportion to form water. They are closely allied to the alcohols, and most of them, in solution, deflect a ray of polarised light, some turning it to the right (marked by a + sign in the following list) and others to the left (marked by a − sign). They are divided into three groups, of which the general formulæ and principal compounds are as follow:—

Glucoses, $C_6H_{12}O_6$	Saccharoses, $C_{12}H_{22}O_{11}$	Amyloses, $C_6H_{10}O_5$
+ Grape sugar	+ Cane sugar	+ Starch
− Fruit sugar	+ Milk sugar	+ Dextrine
	+ Maltose	Cellulose
		Gum

The Glucoses.

These sugars may be considered as aldehydes of the saturated alcohols $C_6H_{14}O_6$. There are eight varieties known, closely allied chemically, but differing in a few physical properties.

Grape Sugar, Glucose Dextrose.—Oc.: This variety of sugar is contained in grapes and honey, and is produced in large quantities in the bodies of persons suffering from the disease called *diabetes*. M.: From starch by the action of special ferments, or by boiling with dilute sulphuric acid. Eq.: $3C_6H_{10}O_5 + H_2O = C_6H_{12}O_6 + 2C_6H_{10}O_5$ (three parts starch producing one part glucose and two parts dextrine). P.: Occurs in crystals or as a dry, white powder; has only a slightly sweetish taste, soluble in water and alcohol, can be heated to 130° C. without change, but decomposes and blackens at a high temperature. *Test:* Glucose added to a solution of cupric sulphate and caustic potash, and heated, throws down a greenish precipitate rapidly changing to red-coloured copper oxide, leaving the solution nearly colourless. (Distinction between glucose and cane sugar: a solution of the latter retains its blue colour for some time.) Glucose triturated with alkalies turns brown. Glucose in solution combines with lime, baryta, and lead oxide, forming soluble compounds which are thrown down on adding alcohol.

Fruit Sugar, Levulose.—Oc.: In honey and fruits. M.: By warming cane sugar with dilute acid a mixture of dextrose and levulose in equal quantities is obtained, called *fruit or inverted sugar*. Eq.: $C_{12}H_{22}O_{11} + H_2O = C_6H_{12}O_6 + C_6H_{12}O_6$. The levulose can be obtained from this mixture by adding milk of lime, when an insoluble compound of levulose and calcium is formed, and can be separated by pressure and filtration, and decomposed by carbon dioxide. Both dextrose and levulose easily ferment and are largely used in brewing. Eq.: $C_6H_{12}O_6 = 2C_2H_6O + 2CO_2$.

Cane Sugar, Saccharose.—Oc.: In the sap of the sugar cane and many trees, and in the roots of the beet and other plants. M.: From the sugar cane by crushing, slowly heating the juice to boiling, mixing it with lime, to separate the phosphates and other impurities. The clear liquor is concentrated and allowed to crystallise. The crystals form *raw sugar*, the syrup *molasses*. The raw sugar is purified by dissolving in water, boiling with albumen, and decolourised by filtering through animal charcoal. The purified product, evaporated and solidified in moulds, produces

loaf sugar. If the crystallisation takes place slowly, *sugar candy* results. Pure sugar slowly separates from a strong solution in large, transparent, colourless crystals which melt at a moderate heat and solidify, on cooling, to a glassy mass called *barley sugar*. The manufacture from beet-roots is the same in principle, but more complicated and requires carefully refining. In some parts of America sugar is extracted from the maple tree (*Acer saccharinum*) by boring through the bark and boiling down the collected liquor; it is nearly all used locally. P.: The action of heat on cane sugar varies with the temperature; at 160° C. it is converted into a mixture of dextrose and levulosan ($C_6H_{10}O_5$), at 210° C. water is given off, and *caramel*, a brown substance used for colouring beers, is formed. At higher temperatures it is decomposed, an inflammable mixture of gases, acetic acid, etc., being given off, and a residue of carbon left.

Cane sugar is not directly fermentable, but a solution on standing is slowly converted into inverted sugar, and this change is produced quickly by yeast, boiling with dilute acids, or on boiling with water for some time. Cane sugar combines with several of the metals. The lead compound has the formula $C_{12}H_{18}Pb_2O_{11}$. *Tests:* Cane sugar is easily oxidised, and if heated with the salts of silver or mercury reduces them, and precipitates gold from its chloride. These reactions are sometimes used to obtain the above metals in a metallic state.

(*To be continued.*)

On the Amounts of Silver and Hypo left in Albumenised Paper at Different Stages of Washing.*

By F. B. Grundy and A. Haddon.

Any one studying the literature of photography must be struck with the diversity of opinion expressed by different workers on the important points of fixing and washing prints, some recommending neutral and others alkaline hypo, and the strength of the fixing solution varying from five to thirty per cent., the length of time the print should be washed varying from one to twenty-four hours.

The danger of an acid fixing bath and its tendency to yellow the whites of a print, and in addition its doubtful fixing power, was first pointed out by Mr. J. Spiller in a paper he read before the Photographic Society of Great Britain on January 14th, 1868. Mr. Spiller in his paper says that "a hint was thrown out by Messrs. Davanne and Girard to the effect that the so-called 'pure whites' of the albumen prints still retained a small proportion of silver in an insoluble condition, and most probably in the form of sulphide."

Further on, the author says, "My experiments went to prove that the metal was retained in the whites of the albumen print, and indeed in all parts of the coating, in the form of an argentic organic compound, colourless, unalterable by light, and comparatively insoluble in hypo-sulphites and other fixing agents. It could not be a simple sulphide, for the test by which I discovered its existence in the paper was the production of a brown stain upon moistening the white surface with sulphide of ammonium." In a paper in the *Photographic News* for October, 1862, Mr. Spiller recommended the addition of carbonate of ammonia to the ordinary hyposulphite fixing solution, for the double purpose of preventing by its alkalinity any chemical change or decomposition of the double hyposulphite; and, secondly, of directly aiding by its special solvent properties in the removal of this organic compound of silver.

In carrying out this research, we had two objects in view: firstly, to determine the time the print should be washed; and, secondly, to endeavour to determine the cause of the fading of the finished print.

Three sheets of albumenised paper from the same quire were sensitised on a fifty-grain neutral solution of nitrate of silver and allowed to dry in the dark. These were then cut into pieces 5½in. by 8½in. The pieces from one sheet were marked A, from the next B, and from the third C.

The paper thus cut up and marked was washed for ten minutes in running water till all free silver had been removed.

Two of these pieces, taken from different sheets, which could be easily recognised from the letters on the back, were placed on one side, in order to determine the amount of sulphur originally present in the paper and also the amount of silver that had to be removed by the fixing agent.

The remainder of the paper was placed in a pint and a half of a twenty per cent. hypo bath; and, as this gave a little more than two ounces of hypo per sheet of paper, we consider we were on the safe side, as Captain Abney says that one ounce of hypo will fix three sheets of paper.

The hypo bath was tested before and after use, and was found to be slightly alkaline to litmus. The temperature was 22·4 deg. C.

The prints were kept in the bath with constant changing for fifteen minutes. Two pieces (again from different sheets) were then taken and allowed to drain for five minutes, and the total sulphur and the remaining silver to be removed by washing determined.

The remaining pieces were then placed in a large vessel filled with water and into which water was constantly flowing. The temperature of the water was 13 deg. C. During the first hour the pieces of paper in the water were constantly turned over in order to prevent them sticking.

Two pieces were removed at the end of 5, 10, 15, 25, 40, 60, 90, and 120 minutes, and 19 hours, and the amounts of silver and sulphur remaining in them determined.

The estimation of the sulphur and silver in the papers was carried out as follows:—In each case the two pieces of paper were allowed to drain for five minutes, and then torn up into small pieces and placed in a large beaker, with a mixture of 100 c.c. of nitric acid and 200 c.c. of strong hydrochloric acid (free from sulphur), covered with a dark glass, and heated on a sand bath till the paper was completely destroyed. The solution was then taken down to dryness, and 250 c.c. of pure distilled water and three drops of hydrochloric acid added, and the whole heated to boiling, allowed to cool and filtered, and the filter paper and beaker washed with boiling water. The filtrate was heated to boiling, and chloride of barium added, which precipitated all the sulphate present as barium sulphate. This was then collected on a filter, dried, and weighed in the usual way, and from this the amount of sulphur present in the paper calculated.

The chloride of silver on the filter was then dissolved out with ammonia, and precipitated by means of nitric acid, filtered off and treated in the usual manner.

The figures obtained are as follows:—

1.	Weight of sulphur in original paper	·0050 grm.
2.	" " in water adhering to paper	·0032 "
3.	" " in paper fixed but not washed	·2243 "
4.	" " after 5 minutes' washing...	·0063 "
5.	" " " 10 " ...	·0045 "
6.	" " " 15 " ...	·0048 "
7.	" " " 25 " ...	·0044 "
8.	" " " 40 " ...	·0043 "
9.	" " " 60 " ...	·0046 "
10.	" " " 90 " ...	·0047 "
11.	" " " 120 " ...	·0045 "
12.	" " " 19 hours' washing ...	·0047 "

The amount of sulphur in original paper has been subtracted from results 4 to 12 inclusive.

1	Weight of silver in paper unfixed.....	·0734 grm.
2	" " fixed but not washed...	·0086 "
3	" " after 5 mins. washing	·0051 "
4	" " " 10 " ...	·0035 "
5	" " " 15 " ...	·0037 "
6	" " " 25 " ...	·0037 "
7	" " " 40 " ...	·0033 "
8	" " " 60 " ...	·0036 "
9	" " " 90 " ...	.0038 "
10	" " " 120 " ...	·0040 "
11	" " " 19 hours " ...	·0039 "

From these figures it will be seen that after five minutes' washing 97·2 per cent. of the sulphur originally present has been removed, after ten minutes 98 per cent., and that, however long-continued the washing, no more of the sulphur can be eliminated. Turning to the silver, we find that as the paper comes from the fixing bath it has lost 88·3 per cent. of its silver; after washing for five minutes, 93·1 per cent.; and, after 10 minutes, 95·3 per cent. After ten minutes' washing the amounts of silver and sulphur remain constant.

It is evident from these figures that the permanency of a print does not depend so much on the washing it receives as on its thorough fixing; and we are strongly of opinion that the best way of removing all the silver is not by using two baths of hypo in succession, but by washing for about five minutes after the first bath, and then soaking in a second fresh bath of hypo.

In what form the silver occurs in the paper, whether as the insoluble $AgNaS_2O_3$, or the soluble $Ag_2Na_4S_2O_3$, held in a sort of "loose combination" with the films of the paper, we are unable to

* Read before the London and Provincial Photographic Association.

state. However, the fact remains that, after a more thorough washing and fixing than prints generally get, ·246 of a grain of silver remains in each 22 by 17 in. sheet of paper; and this, which is probably in the form of hyposulphite in the presence of light and organic matter, is reduced to silver sulphide, and will easily account for the yellowing of the whites of prints after a time.

We had hoped to determine the silver and sulphur in gelatino-chloride paper, and the silver in paper that has been treated to several baths of different composition; but, owing to the length of time required to carry out these experiments, we have been obliged to defer the investigation of those points for a future occasion.

Holiday Resorts and Photographic Haunts.

A TRIP TO TAFFYLAND.

By W. J. Vasey.

I will endeavour to describe to the best of my ability the above trip, which I so thoroughly enjoyed last year, so that anybody who at this present time may be contemplating visiting North Wales, and have not anyone to pilot them, may be able to glean some information that may help them on their way.

I do not ask anybody to walk in my shoes or tread in my footsteps, but I have the greatest of pleasure in saying it was the most enjoyable holiday I ever had, and I found the following programme pass off most satisfactorily.

Assuming that Oxford be the starting-point and that a tourist ticket be the passport by which you can break the journey at certain places, a glance down the fare list will pay for a few moments' study. The following are the results:—Llandudno, 27s.; Bettys-y-Coed, 28s.; Holyhead, 28s.; Carnarvon, 28s. 6d.

If you intend to make Llandudno the head-quarters, then take a ticket to either of the other towns and break your journey at Llandudno Junction, and pay the fare, 3d., from the junction to the town. Then on the day you intend to continue your journey to the destination of your ticket, book again from town to junction and then use your tourist ticket (as much as is left of it after the railway officials have had so many nibbles at it), and by this means you will save from four to six shillings, which will come in useful for oysters and other luxuries.

I will now commence to describe my trip of last year, and add, after the names of subjects I mention, the best time to take them.

Slowly but surely the morning of the 27th July arrived; dull was the morning, but bright were the hopes that rose in my heart as I was collecting the requisites sufficient for ten days' holiday at the seaside. Of course, the one article above all other that on no account was to be omitted was my camera, which is always a companion when out pleasure seeking.

Our train punctually started, and soon we left the classical city of Oxford, with its many noble college and cathedral spires, behind us, and the first hour brought us to the town world-renowned for its cakes. Then away we went to the inland watering-place, Leamington Spa, which presents from the train a sylvan appearance. Not requiring any mineral waters for morning beverage when on a journey, I kept my seat, and in due time our first alighting place was arrived at—Birmingham—unmistakeable by its multitudinous smoking factory chimneys and warehouses, denoting an ever-busy idea.

A walk through some of the central streets, and a gaze at the interesting shop windows, passed away the morning and afternoon; in the evening a few hours were spent at "Venice in Birmingham." Upon entering there was before you a vivid Continental scene, with its gaily-decorated buildings, in the artificial sea upon which trips could be made in the gondolas which were for hire, and whose presence was not allowed to remain unnoticed on account of the ever-frequent shouts of the gondoliers soliciting passengers for trips on the water, passing under the wooden bridges. Of course, it had an eye for business throughout; all the buildings were shops displaying tempting articles in Italian design.

Thursday morning was the time arranged to continue the journey via Chester. Birmingham looked dismal, with the volumes of smoke which were poured forth from the factory chimneys; but as we left the city, we left the dense atmosphere also, and before we had gone many miles, his majesty Sol favoured us with his presence in full brightness.

Having changed trains at Chester, now comes the beautiful part of the journey, with mountains on the left and sea on right, passing *en route* zinc works, lead mines, slate quarries, and several castles.

Llandudno was reached shortly after 4 p.m., and after a good tea, a search was made for lodgings, which proved comfortable and moderate in cost. After so far having pitched my tent, I made for the beach, and whilst perusing the visitors' list I unexpectedly found the names of some of my neighbours, and the persons seemed to gradually appear as their names were glanced over, and by 6.30 the parade had quite a different appearance, there being hundreds of people, their number increasing to thousands until the time drew near for the evening entertainments, which are of such a variety to suit all tastes. During the meantime the nigger troupe gave a little entertainment along the road facing the sea, and the usual seaside juvenile amusement, viz., Punch and Judy, also a marvellous company of performing birds (pigeons and canaries). There are all kinds of entertainments for the evening to suit all tastes. In the pavilion on the pier an excellent concert is given by M. Riviere.

Llandudno has its attractions well and suitably arranged. In the early morning sea bathing is greatly indulged in, also boating. On the pier a morning concert is given at 11.30.

Coaches and other conveyances leave the hotels in the morning for long tours, and in the afternoon for shorter ones, the fares varying from 1s. to 12s. Steamers leave at all times for a large variety of trips, and sailing yachts leave for a few hours' journey.

In the afternoon the nigger troupe give an entertainment in the Happy Valley (aft.), which is a little way up the Great Orme, and overlooks the entire bay and pier. There, in an amphitheatre formed by Nature herself, visitors sit and loll on the rocks and turf, listening to the varied entertainment which causes endless amusement and roars of laughter. Some good snapshots can be had here, especially when the niggers are "cutting their capers." In the evening about 10 o'clock (after the concerts on the pier, etc., are over), in front of the magnificent houses that face the sea, one is reminded of a Christmas scene reversed; instead of the tight-drawn curtains being pulled back to peep at the carol-singers below, you see a group of people looking up listening to the angelic strains in soprano tone flowing from the open windows, that are issued forth by some sweet cherub inside, being accompanied on the piano. Unfortunately, these melodies fade away with the night. Friday evening I took a stroll amongst the huge rocks which lie at the base of Great Orme. A splendid variety of seaweed can be collected here when the tide is out. At 8.30 I patronised the Bijou Theatre, which is at the entrance to the pier, where is given a good sixpenny-worth, including Storelli, the musical clown, and Madame Josephine's living statuary, and Barnard's marionettes, which are extremely laughable.

Saturday: The first hours of the morning brought with them hundreds of excursionists, who seemed, like most people, delighted to breathe in the fresh and invigorating air that so freely envelops the whole town of Llandudno and surroundings. In the afternoon I had a walk around the Great Orme, wending to the south point, where a grand view can be had of the Conway river and suspension bridge on the left, and in front the mountains Penmaenmawr, Tal-y-Fan, Penmaen-Bach, etc. (aft.), while to the right the Irish seas and Puffin Island.

I ascended the Great Orme in a line from south to north, and after a long uphill struggle I arrived at the highest point, viz., Telegraph Inn (aft), 750 ft. above the sea. From this point a grand view can be obtained, the Welsh mountains rising up one above another on the south, the Irish coast on the west, Isle of Man on the north, and Lancashire coast on the west. Oh, how gratifying to find at such an isolated spot that refreshments could be obtained, both alcoholic, aerated, and lacteous. You may be sure I did not miss the chance to partake of some. Upon entering the little yard you may guess how astonished I was to be unexpectedly confronted by a brother. It was one of the Jerusalem quadruped type, whose long ears and keen eyes indicated his arttulness and old age. As I was about to leave, the old but true saying rose up in my mind, viz., "When shall we three meet again?" (1, the Telegraph Inn; 2, the four-legged animal; 3, my humble self).

Now comes the descent. About half a mile is St. Ludno's Church (aft.), standing alone on the west side, supposed to have been built in the 12th or 13th centuries, and restored in 1855, owning many elegant and tasteful tombstones. This church is attended in summer time by hundreds of visitors on Sunday mornings and evenings, when the service is held in the open air. A little further along, the winding footpath brings us to a farm, where again refreshments can be obtained, and lower down still a magnificent view of the town can be had, and this far brings you to the Happy Valley (aft). This descent supplies a panorama in itself, as every few yards a fresh view rises up.

Saturday evening was spent with Herr Cohen, listening to his very instructive and amusing lecture, "How to Choose a Companion," and afterwards several electrical experiments.

Sunday morning commenced with a drizzle, and towards church time one was obliged to abandon the anticipated treat to attend St. Ludno's Church. In the evening I enjoyed the sacred concert given by M. Rivière in the pavilion.

Monday (Bank holiday) was a fine day, and must have been truly welcomed by the twenty-two trains full of Bank holiday excursionists in addition to the numbers brought by the steamers and ordinary trains, and the thousands who had already arrived at this truly-named "queen of Welsh watering-places." I took train to Llandudno Junction, and walked to Conway over the Suspension Bridge (aft), visited the Castle, which is 600 years old, and Plas Maner, wherein is a fine collection of paintings and etchings displayed by the Royal Cambrian Academy of Art upon the ancient walls within which Queen Elizabeth passed part of her life. Permission to photograph any of the interior has to be obtained at the entrance gate. The building is kept in excellent preservation, the original oak panellings and floors remaining, and some furniture bearing date 1625, 1683, 1703. The whole is, as announced, a splendid specimen of Elizabethan architecture, which is dated in two of the rooms 1580.

Tuesday I journeyed by train to Bettws-y-coed, whose grand scenery is beyond any human description. Go where you will, on the one hand you are surrounded by steep mountain sides, garbed with stately pines and oaks, whose many tints of foliage give striking effect to the woodland heights, whose entirety is picturesquely broken by some gabled edifice or rugged rock, which seems ready to descend without notice or pity for who or what it may crush, and now and then by the white smoke and steam rising from the passing engine on the railroad, which is elevated, and entwines the mountain sides amongst the trees, which obscure the train from view at intervals; and, on the other hand, by rippling stream (in which are many a trout and salmon) shaded over by drooping trees.

I took the turn to the right, and visited the Miners' Bridge (morn.), and then the Swallow Falls (morn.). These icy-looking waterfalls pouncing on the huge boulders below are transformed into turbulent depths, and then further down resume their mirror-looking appearance, over which hang the graceful trees, whose lower branches dip their tips in the passing stream. The entrances to both of these are denoted by an official notice by Lord Willoughby de Eresby, stating these lovely places are to be seen free. Praise be given to his lordship for his deep consideration for brother mankind.

The pedestrian or cyclist will find this road a good test for the muscles of the legs, being uphill all the way; but such lovely places are more fully appreciated when some amount of labour is required to get to them. The return journey is as easy as the going was hard.

After dinner I took the turn to the left leading to Fairy Glen (aft.), whose silvery waters softly glide between the large rocks, which are partly covered with moss of many tints. Any one in the vicinity of Bettws-y-coed should never return to their home without paying her a visit, for whatever trouble you may take to get there, you will, I am sure, feel more than repaid by her unsurpassable scenery.

Thursday I took the opportunity of going the splendid sea trip to the Menai Straits on board the *Snowdon*. The whole passage was delightful. After having a good view of the Great Orme we steered across to Puffin Island. The sea was a little "choppy," and only a few were seen to endeavour to wend their way to the rails with pale faces and drooping heads (without attracting notice if possible) to alleviate themselves of that discomfort they felt which the rocking waves had created, and there to divest themselves of their breakfast to the benefit of the hungry fishes.

As we entered the Straits, which are more like a lake than sea, we passed Beaumaris and Bangor, H.M. training ship *Clio*. We could then have a splendid view of the Menai (morn from south side) and Tubular Bridges spanning the Straits and connecting the Island of Anglesea to the Carnarvon coast.

The bridges are a masterpiece of engineering. A walk over the suspension is very interesting, there to see the tens of thousands of parts which are neatly joined together forming this massive piece of structure. Surely this is a vivid proof that "unity is strength."

Along the whole journey you have a fine view of the Welsh mountains, above all the hero Snowdon predominating.

Friday afternoon I visited Penmaenmawr, which is a small town on the south side of Conway river, pleasantly situated at the foot of the mountain from which it derives its name. The station here was the scene of a railway accident on the previous Sunday morning. A train conveying the volunteers to the Conway camp came into collision with another, telescoping several carriages, which then lay on their sides splintered in all directions, which meant severe injuries to the passengers which they contained, and also to the cycles which formed part of the equipment of the camp, which was at Conway Marsh, numbering about three thousand. Friday evening I walked as far as the lighthouse along the marine drive, which is 325 feet above the sea at the north point of the Great Orme. I received great civility from the men then on duty, who clearly explained the various parts and instruments. The lamp itself is a four-wick circular burner, fed by a stream of petroleum flowing at a regulated speed, of which is consumed on an average three gallons per night. The lamp is enclosed by the semicircular wedge-shape lenses which reflect the light from above and below towards the centre, which is then thrown, by means of other lenses, across the ocean, and can be seen on a clear night twenty-four miles away. The walk back was very enjoyable. The moon having risen, lit up the rugged rocks above (which at different stages overhang the road), and also the precipices below.

Saturday being the day to return seemed to come too soon, but pleasure seeking, like everything else in this world, must have its end, and these thoughts were mingled with the assurance that this holiday had been spent of all the most enjoyable, interesting, and beneficial to health that I ever had. Oh! thanks be to dear old Wales, who has revealed some of those splendid views of mountain and lake of which she abounds, and imparted to the visitor stimulated nerve, rosy cheeks, and sunburnt face and hands ready to go back to daily toil with renewed vigour and pleasant recollections.

"MA CHERE VILLE D'ALGER."

By E. TOURIST.

IN the AMATEUR PHOTOGRAPHER for January 4th, 1889 there appeared an illustrated article upon Algiers, which I had the pleasure of preparing. Since that date I have had the happiness of revisiting "Ma Chère Ville d'Alger" more than once, for I know of no other place so near England, so beautiful and so attractive in which to spend a holiday. Algiers is a veritable garden of Eden for the amateur photographer. He is received as a welcome guest by all, Arabs and Frenchmen alike, especially by the former, and I must add that I know of no men more kind and honest and obliging than the Arabs in Algiers. In the strong light of Algiers instantaneous plates are a necessity, and for moving street scenes I found, as a rule, that a shutter working at the 100th of a second was not fast enough with a full aperture. Under heavy verdure, such as "The Valley of Consuls," I found that with Ross's rapid symmetrical lens, and stop 2 (*f*/11.3), from 6 to 8 seconds (when the sun was shining) was the right exposure. In the open, if using a quick hand exposure with the cap, it was necessary to insert the smallest stop, *f*/64.

Having on former occasions photographed the "lions" of the place, such as the mosques, the casbah, the harbour, etc, I determined this time to search for scenes that would make *pictures*. Everyone who has been to Algiers knows the lovely "Valley of Consuls." It is a lonely spot; I have been there for an hour without seeing a human being, but with the sunlight (African sunlight, remember—not English) shining through the great trees, with summer wild-flowers blooming on every hand in November, and the air filled with the music of birds, the loveliness of the valley was to me "a thing of beauty, and a joy for ever."

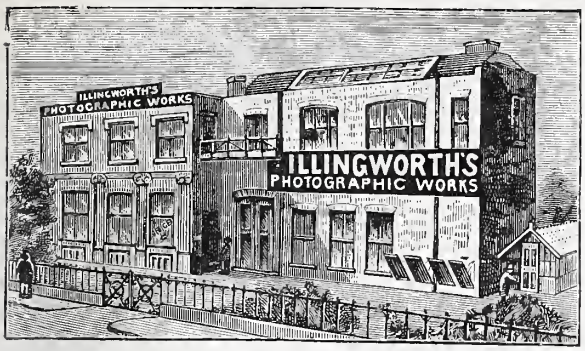
Leaving the principal street at St. Eugene, by a road on the left hand, just before coming to the church, a steep ascent leads to a charming pathway, shaded by trees, abounding with beautiful landscapes of the town of St. Eugene, and of the church of Notre Dame d'Afrique, where, a short time ago, a good man, a friend to the Arabs, Cardinal Lavigiere, died. For those who admire wild scenes of rocks by the seaside, I advise them to visit the sea coast at St. Eugene, where some striking pictures can be secured of sea and rock.

"Mustapha-Superior," beyond Algiers on the opposite side to St. Eugene, is rich in views for the photographer. Every stone's-throw along the "Chemin des Acqueducs" reveals some fresh scene of beauty to the photographer's eye. Many of the hotels at Mustapha-Superior are worthy of a plate or two. "The Hotel Splendide" is a picturesque building, on a lofty eminence, nestling in a forest of beautiful Eastern trees.

Descending from Mustapha-Superior by a most interesting pathway through a forest of Australian and Eastern trees, one comes to the charming "Jardin d'Essai," where every kind of African palm, india-rubber trees, Chinese bamboo, plane trees, and Eastern plants of every description grow to perfection in the open air. It seemed to me as I walked about this exquisite garden, day after day, that a lifetime would not exhaust the pictures that a photographer might make there.

Space will only permit me to write a line or two upon the Eastern scenes to be met with on every hand in the "White City of the Mediterranean." Visions of the Abrahams of Old Testament days, and of the stories of "Arabian Knights" meet one at every turn in the road. And though it is somewhat difficult, owing to religious prejudices, to persuade an Arab man to form part of the picture to be photographed, still it is always easy to obtain for a few sous one of the picturesque, honest little Arab boys, such as the little shoe-black boys, who, by the way, seem, by their actions, to think that man is only born into the world for the purpose of having his shoes blacked every five minutes in the day!

But if I want to have a holiday abroad with my camera, not forgetting the beauties of Naples and of the Riviera, and not even forgetting Cairo, places and cities I know well, I give the palm to "Ma Chère Ville d'Alger," where any photographer who has an eye for the beautiful can be "as happy as king"—I should think happier!



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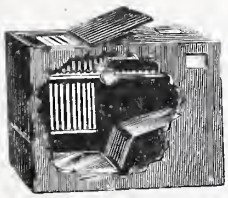
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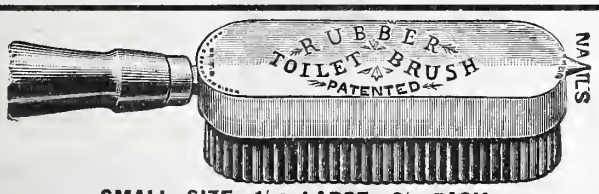
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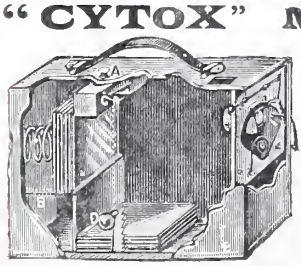
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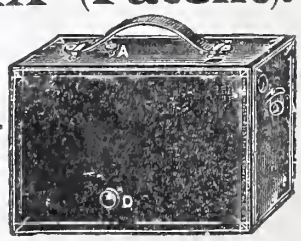
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Our Pictorial Failures.

By the Rev. F. C. Lambert.

Mr. Chairman and Gentlemen,—Let me commence my remarks by a confession. In a moment of vanity I was induced by the irresistible suavity of the hon. sec. to promise a paper for this meeting on some art topic. Little did I then think how difficult it would be to find a suitable subject. Thus once more the old saw is illustrated, "Pride goeth before a fall." At the moment of my rash promise I had failed to realise the numerous conditions of the case; and thus more time than I care to tell has been consumed in search of a subject. In a way, too, that has made me feel the force of one who describes his fruitless chase after a certain all-too familiar, but unmentionable, insect. "No sooner you put your finger on him, but he isn't there at all, and the reason of that same is directly you catch him you miss him." Thus, again and again have I thought I had hit upon something new, only to find it not true; or again on something old and true, but so very *conventional* that it could no longer be held to interest a *conventional* gathering. Or again, if a subject presented *conventional and convivial* features—for the two are in our case somewhat closely akin, if not interchangeable terms—then I grasped it, only to find it was neither new nor true. Hence I reach the crux of my apology. In our "failures," we each may hope to find some conventional, *i.e.*, extenuating or mitigating circumstances. Our failures are, alas! only too true; their truth is only too deeply driven home by their painful frequency. And yet the clond has a silver lining. Our failures are ever *new*; their newness and freshness has all the doubtful charm of being very much "up-to-date"

I shall presnme that most of us, when visiting a photographic exhibition, have at least two objects in view. Firstly, to see and, as far as possible, enjoy the work of others. Secondly, to gather hints and information from the work which has most favourably impressed us. The second of these only concerns us for the present moment.

I venture to think that I am speaking for many others as well as myself, when I say the general impression, after visiting an ordinary photographic exhibition, is one of failure rather than success. To put the matter in other words, the number of pictures that one thinks about afterwards, or would care to possess for constant companionship on the walls of our living rooms, is exceedingly small. Would half a dozen out of every hundred exhibits under or over state the mark? Leaving a liberal margin for personal taste, the net result is that the majority—a saddening majority—are, if not failures, certainly not definite successes. There must be some grave reason for so significant a conclusion. Nor should the enquiry fail to interest, stimulate and add to the value of the discussions of this gathering. On this point I would suggest the following points as being contributory in varying degrees to the general product of non-successes. The free discussion of the topic, whether leading to rejection or acceptance, cannot fail to draw some attention to the subject, and hence tend to diminish the number of failures. But I am not without hope that the results may be distinctly positive and fruitful in producing a greater number of distinct successes.

Some suggested reasons of our pictorial failure:—

1. *The Commonplace.*—I venture to put this first because it seems to include—in somewhat free and easy terms, I admit—the majority of the unremembered. This includes the characterless many, who neither please nor pain—everything about them, selection (save the mark!), exposure, printing, mount and frame, are simply "middling." Hence we are utterly indifferent as to their future fate. Why are they entirely lacking in interest, in the general absence of any positive conspicuous defect, you ask? I reply, the worker in his so-called selection has exactly failed to select. He has taken things as they are. Selection surely implies rejection as well as acceptance. In the cases before us it has been all acceptance and no rejection. Nay rather, may we not say that the general tendency, where it shows any thought at all, points to over-crowding rather than selection? Perhaps collection would be a better word. The "art of leaving out" in many cases, if known, is sternly ignored.

A large element in the commonplace is the presence of so much which is utterly unessential, immaterial, uninteresting, and hence discursive and generally weakening. It acts like a diluent. A teaspoonful of the best and purest and strongest whiskey would have but a poor chance in a gallon of the purest "*aqua-pumpibus*," negative and innocent as that diluent might be.

2. Next comes *Ind-finiteness.*—By this I do not refer in any way to the method of prodncing the out of focus or so-called fuzzygraph method of working. The indefiniteness here indicated is that due to lack of definite aim or intention. This is the man who "aims at *nothing* and hits *it*."

We are assisted to recognise this class of work when it appears with such delightfully bewildering and vague titles as "a study, "a nocturn," "an effect." The only, if any, effect generally produced is that of bewildered enquiry, or perhaps a reminder of some recent puzzle picture subscribed, "Find the dog, the policeman, and the baby."

Impressionism may be all very well in its proper place, provided always that the artist has an impression and some reasonable power of expressing it. But if the would-be impressionist desires to snatch applause by feeble imitation, or shelter his incompetence under vague titles, then he is in no way a true friend to the progress of photographic art.

The third place may be assigned to the defects due to *imitation.* The old saw which says that "imitation is the sincerest form of flattery" requires its "teeth setting" more in a line with actual fact. Experience seems to show that it is only those seeking spurious greatness in the cloud of dust they raise who find any acceptable flattery in the mimicry of a tail of followers, who, in turn, having no ideas of their own, are ready and willing to accept such ideas of their leaders as require the least, if any, effort to assimilate or digest.

It may well be doubted if any one who has thoughts, methods, or ideas of his own of any real value would accept on any terms the fulsome flattery of brainless imitation.

Would Shakespeare, Milton, or Tennyson, Reynolds, Constable, or Turner have turned aside one hair's breadth to win a following of those who at best could only accentuate the defects of their leaders, and dilute beyond recognition their choicest merits? We may look and look in vain for any great artist in form, colour, song, or stone, who has wrought his way to lasting greatness by imitation, such as is not altogether unknown by those who are eager to be dubbed photographic artists. Earnest, conscientious, and laborious study and analysis of the greatest works of the greatest men is no doubt of inestimable service to those who aspire to be their compeers, but true study points to principles rather than rules, results rather than methods. The student will be as anxious to avoid the semblance of imitation as he is desirous of reaching, if not outstripping, the triumphs of the masters who inspire him; at the same time there will be an equal anxiety to make his work his own beyond the chance of merit it may possess being suspected of having been filched, or even borrowed, from the work of another. Much has been said, sometimes with truth and sense, and sometimes otherwise, on the subject of schools in photography. The pages of the history of painting teach us that "schools" are not to be manufactured at the whim and fancy of individuals. The causes at work were deeper seated and more fruitful than the passing popularity of an eccentricity or novelty. Furthermore, this difference between painters and photographers seems to lie on the surface. Whereas among the schools of painters each and all profess (and practice with varying degrees of truth) to study in and appeal to Nature—each school professing itself to be a more faithful exponent of Nature than the others, and in that sense all are impressionists—while, on the other hand, photographers with an equally charming candour, one and all profess to study in and appeal to the same great school, Natnre; yet it would seem as though not a few were content to have their seeing and thinking second-hand, since by their productions their efforts show an industrious and not always unsuccessful effort at imitating the productions of each other.

4. *An inversion of the means and the end* must be held in part responsible for some misspent energy. An all-consuming anxiety to display to its utmost limits the possibilities of some instrument, the capabilities of some process, is a terrible temptation to many. Microscopic definition, biting sharpness, topographical precision are phrases that have had their day and due regard. The transitional phase of differential focus is passing into further development of astigmatic distortion, or the suppression of definition by diffraction.

In those of an independent or experimental turn of mind their means may, and do at times, produce results which are not only extremely interesting, but also have a value as being expressions of a personality, but the counter-balancing disadvantages come *pari passu.* No sooner does one see a success snatched by some pioneer, but it is quickly imitated and diluted to such an extent that its virtues, even though few, are ignored, while its defects, no matter how many, are each and all repeated until the unfortunate founder or leader of the school is saddened by finding that the world only sees his excellences or his multiplied defects.

The "fatal facility" of production tempts the great nnthinking crowd to rush headlong down the course of destruction, leaving in their trail "wrecks and rnins" of wasted material. Now do they rush for the pictorial crown through *f*/64 of a highly corrected symmetrical doublet, now through a pin-hole, now it is a spectacle lens, now an astigmatic lens. Having tried and found wanting any and every lens, and finally no lens at all, inspiration whispers, "Try a new printing process." Thus from chocolate-box-lid polish and

gloss to roughest sand-paper is but a step. In each and every case an anxiety to display the means, rather than use the means according to the end desired, meets us again and again, and accounts for some proportion of the pictorial failures.

5. Lastly, some small place must be found for the failures due to *misdirected rivalry*. That a certain picture obtains a measure of notice is enough to set some at work to outstrip this picture by some slight advance either in subject, pose, lighting, or other method or means employed. The results of such rivalry must of necessity be unhealthy, as being the product of jealousy and imitation. All thinking art workers are agreed that the first quality of success is that the work attempted shall be felt worthy of the effort expended on it for its own sake. In other words, if a man's heart is not in his work there will be very little art in it. Obviously then, where one attempts to imitate and rival the productions of another it is not a case of true affection, but the green-eyed monster, that is secretly at work.

To sum up briefly, our enquiry seems to point to a handful of causes tending to produce work which, if not distinctly and definitely failures, are undoubtedly not successes. Let us go, in imagination, five times round the walls of a photographic exhibition. On each journey we shall weed out such pictures (or rather prints) as show the following shortcomings:—

1. The commonplace, due either to overcrowding of entirely extraneous, uninteresting, unessential elements. For the most part, if they are not positively offensive, they are absolutely uninteresting, dull, and characterless. They are "*the jelly-fish order.*"

2. The indefinite or meaningless, that have nothing to say, and say it in silent elequence. Their result, if any, is only to irritate. These are "*the penny puzzle card order.*"

3. The feeble imitation class, wherein its slight excellence (often difficult to find) has been obtained by other than honest, straightforward, individual and personal work. These we may dub the "*petty larceny class.*"

4. Means *v.* end, where the worker is anxious to display his dexterity in the use of his tools, perhaps with the hope that, as "fine feathers make apparently fine birds," so possibly artfulness may pass current for art. Let us call these "*the conjuring trick class.*"

5. Rivalry, where one worker endeavours to build a fame upon the head of another worker, not because he cares about the subject, but because he is anxious to try and make himself the larger by ungenerously belittling another probably more modest worker. As it is not easy to find a name for these, perhaps we may best pass them over as the "*nameless unworthies.*"

Having removed, gently but firmly, the foregoing five siftings, it may be reasonably hoped that whatever, if any, are now left will have suffered no loss but gain rather by having passed into "Standard Six."

Holiday Resorts and Photographic Haunts.

IN KIRKCUDBRIGHTSHIRE WITH A CAMERA.

By B. HYSLOPIAN MACHUS.

(*Concluded from page* 82.)

LET the photographer now return to Castle Douglas, and thence take train to New Galloway, which station will be reached in about half an hour. The town of New Galloway lies about five miles from the station. Conveyances meet almost all the trains, and the drive is a very pleasant one, as the road leads along by the water's edge of Loch Ken, at the head of which stands Kenmure Castle. The camera man will do well to keep his eyes open during this drive, as numerous pretty "bits," both on the road and on the water, can be observed and notified for subsequent treatment.

Just before entering the town, the visitor passes by the entrance to the castle. At this entrance there is a very fine old avenue of lime-trees. A book published in 1801 describes it as the (then) finest avenue of limes in Scotland.

Two comfortable hotels in New Galloway are the "Kenmure Arms" and the "Cross Keys." This is a really pretty little town (call it a village, and you insult the natives). A plate or two may be favourably impressed from either end of the street. The buildings all down the way are interspersed here and there with graceful overhanging trees, which form fitting contrast to the somewhat glaring brightness of the whitewashed cottages.

By following the road which leads to the Kenmure bridge, but striking off at a point about 500 yards from that structure, the Trochie's Braes are reached. This is a lovely spot, and the photographer will find himself in a typical specimen of Scottish country lane, which, with such characteristic surroundings as a gravel-laden cart led by a farm yokel, or a short-petticoated milkmaid bearing her cans, or driving the animals entrusted to her care to one or other of the numerous farms close by, will make a capital spot for picture making. Leaving the lane, and by descending to the water's edge, the Ken can be photographed in its here silent and gently flowing grandeur.

At the foot of the town, standing back from the street, is situated the picturesque village—(I apologise)—*town* smithy, by the side of which purls a tiny brook under the shade of—not a chestnut—but an oak tree, and the whole forming, from a good view-point, and with the worthy smith well positioned, a very fair picture.

The photographer should next ramble down to the meadows, where many a rural scene may be encountered, such as children chasing the geese homewards, or, in the evening, the farmer leisurely strolling behind his cattle until they reach the water, where they partake of their last drink for the night. Then on towards the Loch, some grand "bits" of silent water or "loops" are to be found, partially overgrown with lilies and bold clumps of tall grass and reeds, through which may oft be seen at the waning of the day the majestic forms of a couple of swans seeking out a resting-place. Scenes such as the above are best rendered in the soft, peaceful light of the setting sun, and by the use of quick isochromatic plates.



"On the Ken."

About half a mile up the Dalry, *via* Glenlee Road, lies the Kells Parish Church, a pretty structure in as pretty a situation, and which is worth a couple of plates.

From the high ground in the Town Park a magnificent panoramic view can be had, with Kenmure Castle in the middle distance, part of the winding river and Loch Ken in the background, which is given a good "distance" effect by the foreground of whinbush and bracken. This grand scene is recorded, I am told, upon one of the largest canvasses in the Royal Academy this year, from the studio of one of the Faeds.

Two miles from New Galloway lies a little village, with a big name - Balmaclellan. Two or three plates may be profitably exposed here on the flower bedecked cottages. Isochromatic plates I found to be highly efficacious in rendering these floral streets. A wet is to be procured at the Plough Inn (milk is plentiful in the district). Let the photo-tourist next proceed to the "Clachan" of Dalry, which lies about four miles from New Galloway, and can be got at from Kenmure Bridge by public conveyance every morning at about eleven o'clock. This village is scarcely as nicely arranged and generally pretty as several of the others here noticed, but still its wide street is worth at least one side of the dark-slide. There are two good hotels. The "Lochinvar" has excellent accommodation and moderate terms. It is in the vicinity of Dalry that the river Ken

is to be seen and photographed to its greatest advantage. Here it is a veritable paradise of river scenery. In some parts the water lies in deep smooth pools, wherein are reflected the immense crags above. At other places it runs its winding course between fine tree-grown banks, and here and there great boulders, topped with weather-beaten fir, or gracefully bending silver-birch, stand out and materially help the composition.

Starting from Dalry and going up the river about a mile, one reaches Allangibbon Bridge, which makes a very good photograph if a point of view is tastefully selected. Then, by proceeding up the stream for another mile or so, the Earlston Lynn appears, with Earlston Castle in the neighbourhood, neither of which should be missed.

In photographing the river about this place great care should be exercised in choosing the foregrounds. Have a quiet reflecting pool or a bit of wild bush, rather than a large mass of rock, as the latter is very apt to have a monotonous and uninteresting appearance in the print.

There are numerous other towns, villages, and hamlets in this district which have not been mentioned here, but if the photographer has an eye to the beautiful in nature, and "does" the portions of Kirkcudbrightshire herein suggested as fruitful fields for the camera, and secures good negatives, he may consider that he has done fairly well.

Besides the pleasures to be derived from photographic work, one here gets the benefit of a pure exhilarating air, and is far away from the howling niggers and beyond the boom and boisterous bustle of the blustering band of the Salvation Army of some of the gayer of our so-called popular holiday resorts.

For photographing the various villages from the streets, quick plates and exposures are almost a *sine qua non*, as the country life and stir in the picturesque thoroughfares are of as much, if not more, import than the mere delineation of the buildings themselves. For this class of work I have used Paget xxxxx plates with success, using a 5½ in. focus lens stopped down to *f*/12 and with an exposure of 1-30th sec. in bright sunshine.

Then for work about the rivers and burns, isochromatic plates will be found to be the most satisfactory.

I shall be happy to supply any further information in my power through our worthy Editor, who has my "number."

Societies' Meetings.

Ashton-under Lyne.—Excursion to Liverpool on 29th ult. Considering a dark and drizzly morning, a goodly number attended, led by Mr. Chas. Lord, who had secured a permit to photograph on the docks, also a permit from the White Star Line to view and photograph the R. M. S. *Majestic*. The ship had just been beautified, and those who had cameras soon had them in position and secured rare and good pictures. After this a number of plates were exposed on ships, etc., amongst them being a good picture of one of H. M. troop ships.

Brixton and Clapham.—A meeting was held on the 1st inst., the chair being taken by Dr. J. Reynolds, F.R.G.S., President. Mr. Morgan attended on behalf of Messrs. Fuerst Bros., and gave an exceedingly interesting demonstration upon the methods of using the new developers Amidol and Metol. He advised amateurs to use the separate developer mixed as stated on the instructions issued by the Company. For bromide work the concentrated solution should be used at nearly its full strength if a black image is required, further dilution giving a cold grey image. The exposure for plates, etc., should be reduced to half of what would be given were pyro used as developer. Very much over-exposed plates tend to produce fog, but it will be entirely absent if the exposure is not excessive. In using these developers to develop plates, bromide paper and lantern-slides the members of the club were pleasantly surprised at the entire absence of veiling and stains. Mr. Morgan stated that the hands will not be stained unless the dry chemical is touched. The solution may be used over and over again, Mr. S. H. Fry having developed as many as twenty half-plates in two ounces. At the conclusion of the demonstration a vote of thanks was passed unanimously for Mr. Morgan's thorough explanations of the methods of working these developers, and several members promised to take up Amidol and report the result in due course. The next meeting of the club will be held on August 15th, when the Paget Plate Company will give a demonstration before the members of the club. Photographers residing in the locality are cordially invited. One of the Committee of Instruction, Mr. Edwards, will be present to answer any questions upon photographic subjects which may be put by any member requiring elementary information, and it is hoped that all beginners will fully avail themselves of the opportunity thus afforded.

Hackney.—On 1st inst., Mr. W. J. Hensler presiding. Members work was shown from Messrs. Barnes, Cross, Fort, Hankins, Hensler, Nunn, Puttock, and Roofe. Mr. Barnes showed a negative, a portrait, which was spotted all over the face. A member suggested that it was some incipient skin disease, but it was negatived by its having the same spots over the eyes. Mr. Nunn showed a bromide paper print developed with amidol, and asked what caused it to have a yellow tint in places (not stains)? No satisfactory reply could be given. Question box: What action takes place when an exposed plate is first placed in the alkaline solution only, previous to pyro? Reply: A mechanical action only by which the alkali penetrates deeper into the film, so that when pyro is added, more detail is ensured. A case lined with ruby cloth from Messrs Doublet was shown for storing untoned prints. Mr. Hensler showed a lantern plate, of which he had many similar, which on developing was veiled over, and which a clearing bath would not remove. Messrs. Cross, Hankins, and Hudson had had the same experience: no doubt they came from the same batch. A discussion then took place as to in what way the society's Saturday outings might be improved. Some practical suggestions were made.

Rotherham.—Monthly meeting, Aug. 1, Dr. Baldwin (president) in the chair. Good attendance of members. The business included the competition arrangements for the present year. It was agreed that there should be classes for excursion work, untouched negatives, prints, lantern slides, most artistic photo and hand-camera views. It was announced that the room in the Rotherham public museum, placed at the disposal of the society for exhibition purposes, had been opened. The work displayed, although somewhat hurriedly prepared, had been very favourably spoken of.

Sheffield.—The ordinary meeting was held on 1st inst., Mr. E. J. Chester man in the chair, when, after the routine business of the meeting, Mr. B. J. Taylor and Mr. E. Beck were appointed delegates to represent the society on the Council of the Affiliated Societies of Great Britain, after which the prints of the Photographic Exchange were submitted to a severe but good-humoured criticism, which will, no doubt, lead to good results and be for the benefit of the Society generally.

The Northern Phot. Assoc.—Ordinary meeting, 3rd inst. Mr. Teversham delivered a lecture on "The Bacteria found in Water." The ellipsograph, a little instrument for describing an ellipse of any given size, was exhibited and explained by the inventor, Mr. J. R. Hicks. A patent catch for camera stands, the invention of Messrs. Spratt Bros., was exhibited. It was announced that the next ordinary meeting would be on Thursday, the 17th inst., when a number of lantern slides will be exhibited by Mr. Goodhew.

Tunbridge Wells.—A meeting was held on the 3rd inst. There was a large attendance to hear Mr. S. Herbert Fry give his lecture on the Sandell Plate. The lecturer said the multiple films had several points of advantage for instantaneous work, preventing halation, interior work, the power of rendering pictures which were not flat, and were practically over-exposure proof. For hand-camera shots, the top film being rapid allowed for under-exposure, and the second film absorbed the high lights and preserved the picture from being over-exposed, as development might be pushed, but there would be no reflection, on account of the multiple film. For preventing halation, the films being of different rapidities, if the light had passed through the first film, there would be the second, and if through that the third. Each of the films possessed different physical and chemical qualities, the principle being that the light is intercepted and usefully employed by the lower films, which entirely prevented the light passing into the glass or support, thus making backing needless, which is both messy and troublesome, and obviating the disagreeable effects of light in the wrong place. For interiors where you get very deep and very high lights, a quick and a slow emulsion is required, which you have in this plate, the films having been put on with different speeds, the image of a window would be formed on the lowest film, the half shadows on the middle film, and the dark shadows on the first film. A better and truer perspective was got by a longer exposure, as well as a more artistic representation, more roundness and relief, and more stereoscopic effect. With regard to exposure, Mr. Fry fully impressed the necessity for a full exposure, as the latitude was enormous. The lecturer then developed two plates, interiors he had brought with him, one with an exposure of six minutes, and one with sixty minutes, which showed the latitude allowable, and also one that had been exposed by the Hon. Sec. (an interior), which was very successful. Mr. Fry strongly recommended a tentative development and a strong fixing bath. The fine series of 15 by 12 prints were shown, all more or less difficult subjects, and fully bore out all that was claimed by the inventor, having been taken and developed by him, and they were much appreciated. On the motion of the chairman a hearty vote of thanks was accorded Mr. Fry for his interesting lecture which had given them so much pleasure by the able manner he had treated this important subject. It was announced that the next excursion would be on the 16th inst., when, by the kindness of the Marquis of Abergavenny, members were to visit Eridge Castle.

SOCIETIES' FIXTURES.

Aug. 12—HUDDERSFIELD.—Ramble to Morton Wood, Boshaw.
„ 12—BRISTOL (Camera Society).—Excursion to Tipton Court and Church.
„ 12—S. LONDON.—Excursion to Surrey Commercial Docks.
„ 12—MANCHESTER.—Ramble to Warburton.
„ 12—OLDHAM.—Excursion to Southport.
„ 12—NORTHAMPTONSHIRE.—Excursion to Olney.
„ 12—NORTHERN PHOTOGRAPHIC.—Excursion to Chigwell.
„ 12—ROCHDALE.—Excursion to Robin Hood's Bed and Blackstone Edge.
„ 12—LEYTONSTONE (Camera Club).—Excursion to Richmond Park.
„ 15—CHEETHAM.—"Wet Collodion Process."
„ 15—BIRMINGHAM.—Social Evening.
„ 16—PHOTOGRAPHIC CLUB.—"Home Portraiture."
„ 17—ASTON NAT. HIS. SOC.—Special. "Entomology."
Aug. 17—NEWCASTLE-ON TYNE.—Outdoor Meeting, Alnwick.
„ 19—BRISTOL (Camera Society).—Excursion to Stapleton.
„ 19—PHOTOGRAPHIC CLUB.—Excursion to Ongar.
„ 19—WEST LONDON.—Excursion to Uxbridge.
„ 19—MANCHESTER.—Ramble to Bollin Valley.
„ 19—LEWISHAM.—Outing to Hever, Chiddingstone, and Penshurst.
„ 19—PAISLEY.—Excursion to Bridge of Weir.
„ 19—NORTHERN PHOTOGRAPHIC.—Excursion to St. Albans.
„ 19—GOSPORT.—Excursion to Carisbrooke.
„ 19—BOLTON.—Excursion to Ashbourne for Dovedale.
„ 19—LEYTONSTONE (Camera Club).—Ramble along the Roding.
„ 19—LINCOLN (Camera Club).—Visit to the Cathedral and Cloisters.
„ 19—BIRMINGHAM PHOTOGRAPHIC SOCIETY.—Half-day Excursion to Kinver.

To Correspondents.

All communications for these columns are to be addressed to **The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.**

RULES.

1. Write clearly and distinctly on one side of the paper only.
2. Write each Query or Answer on a separate sheet of paper.
3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.
4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.
5. The Editor does not undertake to answer Questions by post.
6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES.

6149. **Ferrotype.** — Would any reader kindly inform me whether it is possible to obtain satisfactory results in the ferrotype process by means of lime light or any other suitable artificial light; if so, whether it would be advisable to use dry plates in preference to wet?—A. McC.

6150. **Toning and Fixing Bath.**—Can any of your readers give me a formula for a combined toning and fixing bath for prints on albumenised paper, besides the acetate of lead one?—A. G.

6151. **Exposure.**—About what exposure would I have to give to photograph an engraving, say, using stop *f*/32, in a diffused light, and plates of the ordinary make?—E. P. M.

6152. **Developer for Kodaks.** — Will anyone kindly tell me whether I could get good results developing Kodak films with hydroquinone, or is amidol better, and what proportions, if the latter is used?—L. R.

QUERIES UNANSWERED.

June 2.—Nos. 6102.
„ 9.—Nos. 6106, 6108.
„ 16.—Nos. 6109, 6110, 6111, 6112, 6113.
„ 23.—Nos. 6115, 6116.
„ 30.—Nos. 6118, 6119, 6120, 6121, 6123.
July 7.—No. 6128.
„ 21.—Nos. 6131, 6133, 6134, 6135.
„ 28.—No. 6138.
Aug. 4.—Nos. 6142, 6146, 6147, 6148.

ANSWERS.

6141. **Llandudno.**—This query was answered in the issue of March 17th, 1893. There is also a pithy article in the Amateur Photographer's Annual" for 1893.—D. H. W. PREEDY.

6143. **Darkening Frames.**—A small quantity of burnt umber ground in oil, mixed by adding equal quantities of turps and goldsize. If applied thinly the colour will be lighter than if applied in a thick state. When dry, apply a coat of patent knotting, and finish with brown hard varnish. Trusting this will suit your inquirer.—A. R. ALDER.

6144. **Bangor.**—Messrs. J. C. Rowland, 17, Castle-street, Carnarvon, and Joseph Kinsley, North-road, Carnarvon, stock plates, paper, and chemicals. The latter keeps a dark-room. These are the nearest photographic depots to Bangor, according to the "Amateur Photographer's Annual."—D. H. W. PREEDY.

6145. **Grindelwald.**—There is no place at Grindelwald where plates are sold. G. N. P. had much better take plates out from England. If I might advise, I should say Thomas's thickly-coated slow landscapes for ordinary use; better still, Thomas's films, as they weigh so much less. I hope to go to Switzerland next week, and shall take them or the new Sandell films. Shall be glad to give G. N. P. any information about Grindelwald, or any place in the Bernese Oberland, or send prints for inspection. Address with Editor. J. Boss, proprietor of the Bear Hotel, is an amateur photographer, and had a dark-room two years ago.—MITRE.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

S. J. BARTON.—You can compete. Entry forms sent on.

H. J. CLAGUE.—September 16th and 23rd, 1892, are the numbers you want. The camera you name is a good all-round camera, fitted with good lens and shutter, and well made.

J. R. B.—We will see what we can do; thanks for suggestion. (1) The relative exposure would be about 1 for lamp and ½ for magnesium. (2) About three inches would be about right. (3) Give rather short, not full exposures, and use ferrous-oxalate or metol. (4 and 5) Quinol is very apt to give brownish tones, and is not so good as iron. (6) The distance between lens and negative should be 7⅛ in., and that between lens and paper 22 in. (7) The paper is very good, and gives some excellent results.

H.—Use the Dallmeyer 5 by 4, and the distance from print to lens and lens to plate should be 12 in; that is just double the focus in each case. You do not state whether it is a photo or ordinary engraving. Let us know.

KROC.—(1) Make your developer up as follows:—

Amidol	4½ gr.
Sodium sulphite	45 „
Distilled water	1 oz.

Use 10 per cent. acetic acid as restrainer, and add more sulphite as accelerator. Make your developer up as you want it, and do not keep a stock solution. (2) Make the ferrous-oxalate developer up exactly as advised for paper, and use in the same way. (3) It is the focus of condenser which governs the size of lens, and either a cabinet or half-plate portrait lens can be used, the larger the better.

L. F. S.—The red patches are probably caused by the print not being evenly covered in the toning bath; that at the bottom is due to dirty fingers.

GILSLAND.—We require all queries to be backed by name and address. (1) Any form which can be used on a stand and in the hand. (2) Quarter-plate, most decidedly. (3) Simplicity in movements, a good shutter, and a good lens. (4) The camera you name is beautifully made, but rather heavy. (5) If you will send a numbered list we will place in order.

W. E. AUGEAR.—(1) The print was toned with—

Potassium chloroplatinite	1 gr.
Potassium oxalate	20 „
Potassium acid phosphate	5 „
Distilled water	1 oz.

The same tone may be obtained on all chloride papers. The prints are lent, but we will see about it when they return. Soda or potash and not ammonia should be used for isochromatic plate. Use a 10 per cent sol of washing soda.

LEARNER.—It is impossible to remove the marks caused by uneven flow of developer. The only thing you can do is to try and even up the plate by pasting papier mineral or tissue paper on the back, using black lead and a stump on the thin parts.

F. PERRETT.—Either your combined bath was old, or you did not wash your prints properly, and thus gave rise to sulphur toning, which causes the green tinge.

BUNKUM.—Yes, rather thin, soft, and full of detail negatives are best. If your prints are hard use a glycerine bath and then develop the water first, so as to coax the detail out.

R. ROBERTS.—You must let us know what size camera you want, and whether for portrait work only or for general all-round work, and send stamped addressed envelope and we will write you.

C. E. F.—

Pyro Solution.

Pyro	1 oz.
Sodium sulphite...	4 „
Sulphurous acid...	½ „
Distilled water	9½ „

Soda Solution.

Sodium carbonate cryst.	2 oz.
Water	20 „

Bromide Sol.

10 per cent sol. potassium bromide.

For use mix

Pyro solution	30 minims.
Soda solution	½ oz.
Water	to 1 „

PRACTICAL.—(1) A good R.R. (2) *F*/8. (3) Yes, it gives good definition and is free from flare spot. (3) The Kershaw Shutter. (5) 1-15th to 1-90th sec. (6) Yes, till the lens is closed. (7) Quarter-plate. (8) *F*/8, *f*/11, *f*/16, *f*/22 and *f*/32, we think. (9) No.

CHAMBERLAIN.—(1) If concentrated, about a month or six weeks. (2) Plates should remain in ten minutes. (3) Prints may be toned in gaslight or in subdued daylight, that is in a room with the blinds down. (4) Yes, add 30 gr. every time you tone.

A CONSTANT READER.—Jabez Hughes' "Principles and Practice of Wet-plate Photography," from Percy Lund, Memorial Hall, Ludgate Hill, E.C.

A. GALLAWAY.—Many thanks, we note elsewhere.

L. C.—Print not received.

ILFRACOMBE.—The rule is, square the number which expresses the ratio aperture, that is the ratio your diaphragm bears to the focus of lens, and you will have relative exposures with those stops—and as your lens is provided with *f*/10, *f*/14, *f*/20, the exposure is as 100 : 196 : 400, or as 1, 2, 4.

M. P. CRAIG.—Many thanks, we note elsewhere.

F. O. PICKARD.—We are afraid it will not be possible to fall in with your idea at all.

CLENNAM.—The explanation of the curions anomalies may probably be found in the fact that three judges placed the prints, and somebody else wrote the criticisms, and although a print may possess atmosphere and gradation, there may be some violent inartistic treatment which puts it down low.

L. R.—There is absolutely no difference in the quality, and the tone given by the two salts of gold.

F. R. BALL.—(1) Many thanks, we have noted. Mr. Morris's dark-room. (2) It is a little uncertain, probably the beginning of October. (3) The white specks are probably due to air bubbles; the only thing to do is to paint over them; there is no other paper in the market. (4) Yes, we shall be pleased to see you some Monday; write and make an appointment. Always glad to help you.

PROVINCIAL.—Use the solution just as it is; it requires no other addition.

A. M. M. SWINEY.—We have noted your letter.

H. L.—The only way to do it properly is to make a positive first and then a negative. You will always get a fogged result, but probably you would get a better result by only exposing for about ten minutes. You can only enlarge with an enlarging camera or lantern, or by using a darkened room and daylight.

W. WALKER.—(1) Flat and uninteresting, not worth taking. (2) Over-printed, and a little too much foreground. (3) Spoilt by the figures; too much foreground too. (4) Too much foreground, and the left-hand side too uninteresting, print overtoned. Your work would be put in the third class, and is hardly up to standard yet; let us see some more.

The AMATEUR PHOTOGRAPHER

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No. 463. Vol. XVIII.] FRIDAY, AUGUST 18, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—The Central Club—The World's Fair through a Camera—Bad Business at the Fair—Grundy and Haddon's Paper—Mr. A. H. Wall's Articles—Writers on Art—Colour Screens and Anastigmatic Lenses—A New Field for Advertisers—An Accident—Luke Sharp on Rives Paper.

Flotsam and Jetsam, by Anchorite.

Letters.—Anastigmatic Lenses and Colour Screens (Pearson)—Argosy Postal Club (Barnwell).

Apparatus.—Eastman's Nikko Paper—Rayner's Dish.

Articles.—Photographic Procedure (Wall)—Pictorial Photography (Wall)—Carbon Printing (Debenham)—Dark-room Illumination—Photo Rubber Stamps in Half Tone (Kraus)—Plymouth Convention Club Report.

Holiday Resorts.—Four Weeks in Brittany (Lysaght)—The West Sussex Quadrilateral—The Land of the Fiord, Fos, and Feld—A Look Round Lynn—Down Among the Devon Fisher Folk.

Societies' Meetings.—Hackney—Leicester—S. London.

Societies' Notes

Societies' Fixtures.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

'Amateur Photographer" Monthly Print Competition, No. 52, Hand-Camera Work. — Latest day, September 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, October 6th, 1893.)

The Executive Committee of the Central Photographic Club have, although apparently quiescent, held numerous meetings to try and overcome the many difficulties they have met with in obtaining suitable premises. In consequence of difficulties raised by the owners of the Fleet Lane premises, where the original habitat was chosen, these premises had to be thrown over, and after a great deal of trouble and delay on the part of others two or three eligible homes have also been abandoned.

Negotiations are now in progress, however, which it is hoped will result in the acquisition of excellent rooms, where smoking and refreshment may be indulged in without let or hindrance, and where also beds may be obtained by country members.

The difficulties met with have been extremely numerous, and, one would almost think, trivial in many cases, if one did not remember that space is valuable in the City.

We have already recorded that one of our old prize-winners, Mr. F. Dundas Todd, was connected with the Chicago Exhibition, and now he has sent us a very interesting souvenir, entitled "The World's Fair through a Camera," which contains nearly a hundred process-block illustrations of all the principal buildings, both exterior and interior. From this one is able to glean some idea of the beauty and vastness of the place.

With such a grand building, or collection of buildings, as we have here shown it is to be regretted that things are not a bit livelier over there. We have received a private letter from a friend who says:—"On all sides one hears nothing but grumbling at the bad business, and if all I hear is true the whole thing will be another of Brother Jonathan's big things—but a big failure this time; the charges are simply awful."

How far this is true we cannot of course vouch, but we heard the other day that one or two of the English photographic apparatus exhibitors are anything but satisfied.

Most, and we hope all our readers, carefully perused Messrs. Grundy and Haddon's valuable paper which we published last week on "The Amounts of Silver and Hypo left in Albumenized Paper at Different Stages of Washing." Those who have not done so should immediately turn back to it and carefully read it through, for a very valuable practical lesson is to be

learnt from it, and we have no hesitation in saying it is one of the most valuable, practical papers we have had for a long time, and all credit is due to the authors.

WE commence this week a series of interesting papers on the pictorial side of photography by Mr. A. H. Wall, who was so many years a valued contributor to the older periodicals, of about thirty years ago. These articles will, we hope, be illustrated by sketches, etc., and thus enable our readers to practically apply them.

THERE are some writers on art who fail utterly to give any practical application to their articles, etc. We have heard it said before now, by men of undoubted standing in the photographic world, that they invariably skip such articles. The faculty of writing on art so that the would-be learner can practically apply the principles laid down is not common; it is not sufficient to know a subject, but it is essential also to be able to teach it if you are to do any good.

WE publish an interesting letter from Mr. Pearson on the use of the colour screen in connection with an anastigmatic lens, which opens up a very wide field for instructive discussion and experiment. We shall be very glad to hear the experiences or opinions of any of our readers on this point.

IN a recent number of the *English Mechanic* it was reported that a fish was recently landed by the steam trawlers at North Shields Fish Quay which proved to be a large skate. On its body was cut in bold letters P.O.P. There has been a perfectly justifiable crusade against those firms who disfigure landscapes with bold advertisements of certain pills, but what will be said of those who press the finny tribe into their service.

EXCEPT for the fact that it is supposed that the letters were cut on the fish whilst young, one might imagine that this was a new field for advertisers which has been opened up by a well-known photographic firm. Certainly there is no saying how far rival pill manufacturers may go, and we shall soon get accustomed to having choice salmon and cucumbers branded with the special remedy for the ills which they are supposed to cause.

BY some untoward accident several sheets of the issue of last week were wrongly folded, so that in some cases complete copies of the paper were not to be had. If any reader has unfortunately received such a copy will he return it to the publishers, who will at once send a complete copy. We may add that it is not necessary to send at the same time a sarcastic letter to the editor, as one reader did; the editor does not fold the papers.

LUKE SHARP, the well-known humourist and London editor of the *Detroit Free Press*, is, as is probably well known, an amateur photographer, and in the above-mentioned paper of 5th inst. he describes his visit to the chateau of the maker of the Rives paper and tells the secret of its success. This our readers must read for themselves. We dare not print it, but the secret is probably worth learning.

Flotsam and Jetsam.

IT was in April last that the first mention of submarine photography was made in this column, and now, only four months afterwards, comes the news that a French photographer has actually succeeded in getting some admirable "submarine views." Where next will the camera penetrate? Its only hindrance is the want of light, and that it overcomes by making light where there is none.

THAT is how M. Boutan gets his submarine photographs He has invented a lamp by which he manages to ignite magnesium powder in such a way as to obtain successive flashes at regular intervals, and thus he secures several views. These photographs, however, can only be taken under a calm sea, for surface waves, or even big ripples, alter the shadows and so blur the picture badly.

IT is not strange to hear that some of the views he has obtained are very "beautiful and wonderful." They are not taken haphazard either. M. Boutan, like a true artist, or a true scientist, has the capacity for taking pains. He goes down first himself, and selects the subjects of his pictures, and then sets his apparatus at work. Both the scientist and the ordinary individual of average intelligence will rejoice in the prospect opened up by the enterprise of M. Boutan.

WHAT new marvels, we wonder, are waiting to be revealed in the silent depths of the sea. Progress will be slow, of course, for it is not everyone who can indulge in this branch of the art, and most amateurs can but wait and admire.

THE number of photographic enthusiasts is legion already, and it is growing every day: but it would be difficult to find a more whole-souled confession of faith than that of which Mr. Eugene Oudin, the famous singer, delivered himself to an interviewer the other day. Mr. Oudin began calmly enough by saying that he took up photography "with the idea of making all sorts and kinds of pictures of my family." And then he launched into panegyric, as thus, "But it was an inspiration. Photography is my religion: the camera is my altar; and if unkind fortune were to steal my voice, I shall earn bread and plenty of butter by taking pictures." Photography, fair maiden, is not ungrateful, and if ever fortune should prove unkind, which the fates forefend, no doubt she will give Mr. Oudin the "plenty of butter" which he has already lavished on her.

MR. OUDIN has exceptional opportunities, of course, but his example of taking photographs of his friends and getting them to inscribe some characteristic sentence, or sketch, or snatch of music on the mount might well be followed by many amateurs. Every such collection could be made very interesting, particularly to the owner.

THEY still say, though it has long been shown to be a libel, that there is no getting a joke into a Scotchman. A tourist amateur has just found that it is at least possible to get one out of him. It was Sunday morning, and he was going about the Highlands, never mind precisely where, picking up some of the gems of scenery that bountiful nature has scattered broadcast there.

A MAN approached him, strolling carelessly along, with his hands behind his back, and then this dialogue ensued:—A. (to tourist): "Excuse me, sir, do you not think it wrong to take photographs on such a day?" Tourist (indignantly): "Certainly not; why?" A.: "But are you not aware that this is Sunday?" "Yes." "And that you're in Scotland?" "Yes." "And yet you do not think it wrong?" "Of course not." "Neither do I," and out came a hand-camera from behind this would-be wag's back, and a snap shot of the tourist, half indignant, half bewildered, was quickly taken.

A HINT for the hotels, now that it is holiday time and the amateur is abroad. Why do they not all provide dark-rooms, and let the public know they do? Many of the big vessels that go on yachting cruises to Norway afford this boon, and it would be equally acceptable in hotels, we doubt not.

ANCHORITE.

Letters to the Editor.

ANASTIGMATIC LENSES AND COLOUR SCREENS. A WARNING.

Sir,—I have just received a pair of Zeiss' anastigmats, *f*/6 series, 4¼ inch focus, made for me by Messrs. Ross and Co., accurately matched for stereo work, and as these marvellous lenses cover the plate at much larger apertures than the rectilinear and symmetrical class owing to the elimination of astigmatism and flattening of the field, it occurred to me that drop-shutter work would be possible with them on isochromatic plates with colour screens; I therefore made a trial exposure on an Edwards' film, one lens working at *f*/7 with an Ilford colour screen behind it, and the other without colour screen, but stopped down to *f*/12 to compensate, the intensity ratio of *f*/7 to *f*/12 being 3 to 1. Subject, a house-front with creepers, sunflowers, etc., small lawn in front, with long flower-bed down one side and a sitting figure on the lawn. Camera about twenty-five feet from house. Shutter, a double phantom with gravity drop only, as the sky was clouded over. Sun came out partially, and another film was exposed with strong elastic band on the drops. Both proved rather under-exposed, and the halves without colour screen showed considerably more density and detail than those *with* screen, proving that three times the normal exposure is not enough with this make of screen. But the worst part was that whereas the halves without screen were microscopically sharp all over, those *with* the screen were all out of focus and miserably fuzzy. I at first concluded that anastigmatic lenses and colour screens were incompatibles, the same screens having been used many times on a pair of rectilinears. But on careful examination I noticed the chimneys and roof and upper part of house furthest from camera were quite sharp, *i.e.*, the most diagonal and shortest rays behind the lens had come to a focus. Hope sprang up, the inference being that the screen had lengthened the lens focus. So made another trial, this time unscrewing the lens with the screen nearly two turns, or 1-16th in., throwing house front out of focus, and bringing the long flower bed which was much nearer the camera into best focus, at same time changing the stop in the other lens to *f*/7, to prove the defect was not owing to the large aperture, *f*/7 of a 4¼ in. lens being a pretty severe test to cover a plate 4¼ by 3¼. Exposure this time about a quarter second. This film on development proved the correctness of my surmise, the end with the colour screen being sharp on the house front and figure on lawn where it had been purposely thrown out of focus, and also part of the long flower bed; but the upper part of house and roof were rather naturalistic. The end without colour screen was so absolutely sharp all over at *f*/7, except near the roof, that it is difficult to distinguish it from the previous one at *f*/12. I then put colour screens on both lenses, stopping one to *f*/9, and unscrewing one turn, and the other *f*/12 without unscrewing. The former turned out to be partially cured of its fuzziness, the latter nearly cured, but no better than with *f*/7 without a colour screen, being about equal to a first class five-inch rectilinear at *f*/11.

Moral,—Anastigmats used with Ilford screens (not tried any other) must either be stopped down considerably or focussed for an object nearer than the principal one, or the two combined. Also the defect is less visible with a full exposure than with under-exposure, owing probably to a weak spherically aberrated image superposed on a corrected one, which, however, drowns it by a full exposure. Instantaneous photography will, however, be quite feasible with colour screens for marine work and open landscape in very bright light.—Yours, etc., A. A. Pearson, Leeds.

* * * *

THE ARGOSY POSTAL PHOTOGRAPHIC CLUB.

Sir,—There are several vacancies on the list of members of the Argosy Postal Photographic Club. This club, which has been in existence for about ten years, is on similar lines to most societies of the kind. It is limited to twenty-five members. I should be glad if any lady or gentleman wishing to join would enter into correspondence with me, enclosing a specimen of their work.—Yours, etc., (Rev.) C. F. L. Barnwell (Hon. Sec.).

Stramshall Vicarage, Uttoxeter.

Fallowfield's "Photographic Remembrancer" is to hand, replete with good things and some cheap job lines which are worth having. All should see this.

Mr. Otto Scholzig, of 31, Binfield Road, Clapham, can now supply any quantity of his white enamel paper.

Apparatus.

EASTMAN'S NIKKO PAPER.

The Eastman Photographic Materials Company have introduced a new bromide paper, with enamel surface and delicately tinted, which, both for contact work and enlargements, is decidedly pleasing. The treatment is exactly the same as for ordinary bromide paper, and either cool greys or rich blacks may be obtained, but now it is suggested to use a hypo toning bath for sepia tones, and very exquisite results may thus be obtained:—

By using the following formula rich brown and sepia tones can be readily obtained on Eastman's Nikko and bromide papers. The tones produced are believed to be permanent, and not subject to the bronzing in the shadows which occurs with bromides toned with uranium.

DIRECTIONS.

Sepia Toning Bath.

Hyposulphite of soda	10 oz.
Ground alum	1 „
Boiling water	70 „

Dissolve the hypo in the water first, then add the alum slowly. When all is dissolved the solution should be milk-white. This solution should not be filtered. It works better as it becomes a little old. It may be strengthened from time to time with a little fresh solution. Never throw the bath away entirely, but replenish in the manner stated.

The best results are obtained by keeping the bath hot, or as warm as the emulsion will stand; say 110 to 120 deg. Fahr.

In this bath Nikko prints will tone in twenty to thirty minutes, and bromide prints in three-quarters of an hour.

Until this bath has been used several times it may be inclined to bleach the prints a little, but as it grows old this tendency will disappear.

The prints should be fixed, then immersed in a cold toning bath, and then transferred to the hot bath. After toning rinse in a tepid solution of

Water	70 oz.
Alum	2 „

Then wash thoroughly.

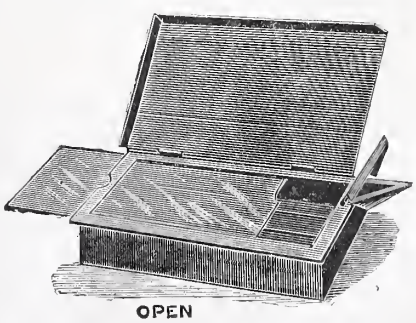
The object of putting the print in a cold toning bath first is to harden the gelatine before putting in the hot bath. Plain alum solution will not answer, because transferring the prints from it will overcharge the hot bath with alum.

The object of the final alum bath is to prevent blisters, and it need not be used unless they occur.

This paper will soon become a favourite, especially for those who like a high polished surface.

RAYNER'S PATENT COMBINED DEVELOPING AND FIXING DISH.

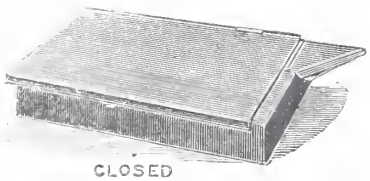
H. Rayner, of 27, Francis Street, New Leeds, Leeds, has sent us a sample of his dish, which is shown in the accompanying diagrams both open and closed. The directions for use are:



OPEN

Withdraw the glass screen, and insert the plate or film in the dish, which must be done in some place from which the light is for the moment excluded, or this may be accomplished by the

aid of a changing bag. The screen is then pushed back, the lid of frame closed, and the small tin cover which encloses the front of the apparatus placed in position. Pour the developer into dish and keep in motion by gently rocking. From time to time the process of development can be viewed by raising the lid and holding the box over any artificial light; when develop-



CLOSED

ment is considered to be completed the solution is poured off, and the plate rinsed well whilst in the dish with clean water, it may then be removed and examined in open daylight without fear of fogging. This will be found useful both for touring and home work, and when closed it takes up but little room. Two screens, a ruby and deep orange, are sent with the dish, so that either may be used as desired.

SELLO'S FRAMES.

M. Sello, of 73, Finsbury Pavement, E.C., has sent us samples of his frames, which are well made and of very neat design and exceedingly cheap. Some of the oak frames, with reeded mouldings and oak cut-out mounts with gold bevelled edges, are very striking; and those of our readers who intend to do a little exhibiting cannot do better than apply to M. Sello, who has a large stock of mouldings of all kinds.

Catalogues.

Falloweield's Annual. Published at 146, Charing Cross Road, W. Price 1s.

This volume has now grown to over 700 pages, and is illustrated with no less than sixteen quarter-plate collotypes from negatives obtained with the Facile hand-camera. Crammed with useful information as to prices and various styles of apparatus, no photographic library should be without it. It is a very useful companion to refer to, and is fully up to date and most complete.

Adams and Co., Photographic Annual, price 6d., post free 1s. Published at 81, Aldersgate Street and 26, Charing Cross Road, W.C.

Of all the most interesting and tantalising books, a well-compiled catalogue is at once the best and worst; interesting because one likes to see the latest advances in apparatus, and tantalising because one looks and longs. This catalogue is well got up and very complete, and contains some useful articles on practical work.

East London.—The above held a special field-day on 7th inst. to Rye House and Roydon under the guidance of Mr. C. Tylee. Assembling in goodly numbers at Liverpool Street Station, a start was made at ten o'clock. After a short run of about forty minutes on the railway, which was enlivened with a song or two and photographic chat, Rye House was reached. The guide at once made a "break" for the open country far from the "madding crowd" of holiday-making cockneys, who, unused to such an array of cameras, made sundry irreverent remarks anent the same. During the march along the banks of the beautiful river Stort a number of exposures were made, it is to be hoped with good results. At about six o'clock Royden was reached, and a halt was made for lunch, after which another start was made, and the Rye House again visited, where tea was partaken of, then a trip on the steam launch to St. Margaret's, and home again by rail.

Photographic Procedure.

By E. J. Wall,

Author of "The Dictionary of Photography."

Section IX.

INTENSIFICATION AND REDUCTION.

(*Continued from page* 94.)

Silver Intensifiers.—Probably on account of the difficulty of avoiding stains, silver intensification has found few friends, yet it is certainly deserving of trial, if only on account of the possibility of obtaining absolutely any degree of intensification that may be thought desirable. It is essential that the negative should be absolutely free from the slightest trace of hypo, and it is advisable to treat the negatives either with an acid alum bath or an iodine bath to destroy any possible trace of hyposulphite. Silver intensification is not so suitable for negatives that have been once dried as for still damp negatives. There are two principal formulæ, pyro and silver and gallic acid and silver.

Pyro-silver Intensifier.—

Solution A.

Pyrogallol	20 gr.
Citric acid	40 „
Distilled water	1 oz.

Solution B.

Silver nitrate	35 gr.
Distilled water	¼ oz.

The plate, which, as stated above, should be wet, is flowed once or twice with solution A, and then the solution poured off the plate, and to every 2 oz. of A add 30 to 40 drops of B, and again apply to the plate. Should the solution, whilst on the plate, become thick, it should be poured off and a fresh lot mixed.

Gallic Acid and Silver Intensifier.—This acts considerably slower than the above, and for this reason is to be preferred.

Solution A.

Gallic acid	1 part.
Alcohol	10 parts.

Solution B.

Silver nitrate	1 part.
Glacial acetic acid	⅓ „
Distilled water	16 parts.

The plate must be absolutely freed from hypo as described above, and for use mix one part of solution A with four parts of distilled water and add a few drops of B. This may be used in daylight and the solutions keep clear for some time.

In consequence of the alcohol the solution flows badly on some plates and therefore it is advisable to soak the plates first in a dilute alcohol 1 : 4, or else to omit the alcohol altogether from the above formula and use an aqueous saturated solution of gallic acid and add to it an equal quantity of—

Silver nitrate	1 part.
Glacial acetic acid	1 „
Distilled water	50 parts.

Howard Farmer has suggested the following—

Solution A.

Silver nitrate	480 gr.
Distilled water	12 oz.

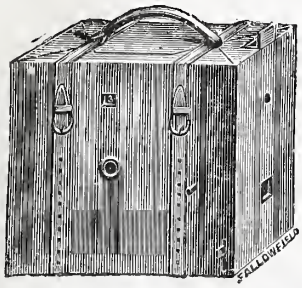
Solution B.

Potassium bromide	360 gr.
Distilled water	2 oz.

Add No. 2 to No. 1, collect the precipitate, and wash thoroughly and then add to—

Sodium hyposulphite	960 gr.
Distilled water	6 oz.

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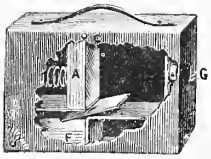
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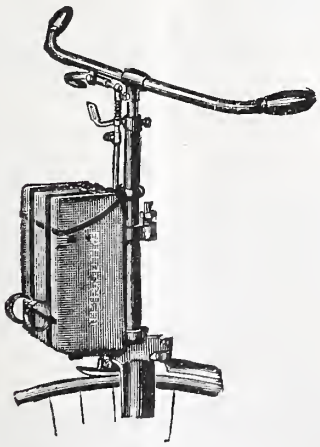
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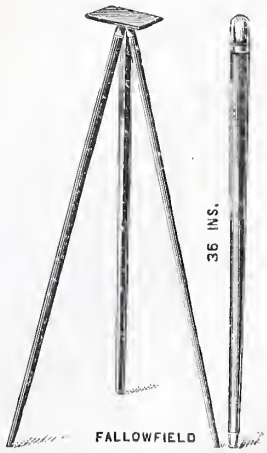


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IT does not seem to be fully understood that my New Enamel paper actually is a Gelatine printing-out paper, but with the difference that, whilst it has **all the advantage of printing-out papers, it has none of their defects,** such as the extreme tenderness of the film and the toning difficulties.

My new paper has a hardened surface, and needs no more care in handling than ordinary sensitized papers, so that photographers who have to turn out large batches of prints can work in the accustomed manner without fear of injuring the surface. Any ordinary toning bath suitable for albumenised paper will produce good results on this new printing-out paper. The brilliancy of the surface is so great that drying on glass or enamelled surfaces becomes unnecessary, the paper itself having a glass-like surface, which is retained in the finished print. The washed prints can be dried between blotting paper without fear of sticking.

Notwithstanding the paper being *better* than any existing printing-out paper, **the price, considering its exceptionally large size,** 19½ by 24, **is actually lower,** viz.:—

1 sheet.	3 sheets.	6 sheets.	½ quire.	1 quire.	
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For *cut* paper I have adopted the convenient system of 1s. packets, which each contain as follows:—

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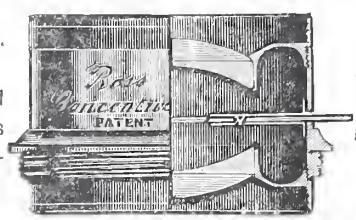
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Stir well and allow to stand for some hours, filter and add sufficient distilled water to make the solution measure 16 oz. The plate should be soaked in this solution for five minutes, drained, and apply a ferrous oxalate developer, or else the following—

Pyrogallol	4 gr.
Distilled water	2 oz.
Silver solution above	60 minims.
Liq. ammonia, 10 per cent.	30 „

As soon as the desired intensification is reached with all these silver intensifiers, the plate should be well rinsed and then refixed to avoid any trace of free silver nitrate remaining in the film, which would afterwards darken in the light.

Uranium Intensification.—This method is a powerful one and is most suitable for very thin ghost-like images. It is also useful in that it may be applied to a negative and then locally removed so as to give one greater power over artistic effects.

Red prussiate of potash	4 gr.
Uranyl nitrate	4 „
Glacial acetic acid	12 drops.
Distilled water	1 oz.

For this method also the negative must be free from hypo, or else stains will ensue. As soon as the desired intensification is attained, the plate should be washed for about a quarter of an hour in water slightly acidified with citric or acetic acid, and then allowed to dry. If it is thought desirable to remove this intensification either partially or wholly, it may be effected by soaking in a solution of washing soda, 1·20.

Lead Intensification.—Except for line work, this method is one rarely adopted, it gives such great intensification and is so liable to block up the shadows. The formula is as follows:—

Nitrate of lead	24 gr.
Ferridcyanide of potash	36 „
Distilled water	1 oz.

The negative must be absolutely free from hypo, and soaked in the above solution till quite bleached. It should then be well washed for half an hour and flooded with—

Nitric acid	1 part.
Water	20 parts.

Then washed for five minutes, and then flooded with—

Ammonium sulphydrate	1 part.
Water	5 parts.

Then washed for ten minutes, treated to another acid bath and washed and dried.

Copper Intensification.—This process has been much puffed because it is said that it is not poisonous. It is not so poisonous as any with mercury, but all the copper salts are poisonous.

Solution A.

Potassium bromide	¼ oz
Water	4 „

Solution B.

Sulphate of copper	½ oz.
Water	4 „

Mix in equal proportion and soak the plate in it till thoroughly bleached, wash well and then blacken with nitrate of silver 30 gr. to the oz., or 1 : 1 solution of ammonium sulphydrate.

There have been suggested several other methods, but they have been and are rather curiosities than practical formulæ.

(*To be continued.*)

The Annual Outing of the employes of Messrs. Wood Bros, Liverpool, took place on Bank holiday last. The day was gloriously fine, and it was unanimously decided to go to Southport. The town was thronged with holiday folks, and much amusement was devised by the use of the "Optic Hand-camera." Some of the snap-shots were very amusing, the "Pausodonoptic" lens giving good results with the Imperial and Paget Plates. Rowing on the lake was well patronised, and all returned home after a very enjoyable day's outing.

Pictorial Photography: its Principles and Practice.

By A. H. Wall.

CHAPTER I.—INTRODUCTORY.

WHY PHOTOGRAPHY SHOULD BE PRACTISED AS A FINE ART.

Nothing has more clearly demonstrated that the mere representation of a certain set of facts, however faithful, has not the interest or value a work of art has, than photography does. It must puzzle a good many thoughtless observers, to account for this strongly marked difference. They stand before the picture of a clever painter or draughtsman, and find that it appeals to them as no ordinary camera production does. And they don't know why. A glance or two is sufficient for the one, but in the other the interest is far more lasting. There is somehow more to be seen in it; it has more to say to you, and it says what it has to say more forcibly and with deeper meaning. All it has is not on the surface. There is the same contrast between these things as there is between the auctioneer's catalogue of some choice vestiges of antiquity and a learned archæologist's essay upon them. The one is full, the other empty—one has inner meanings, and the other is mere outside show.

The same difference exists between an ordinary person's description of a picturesque scene in nature and a Ruskin's description of it. In principle the difference is that separates a police reporter's account of wife murder from Shakespeare's "Othello."

The difference is not a mere question of realistic details, for if this were so the photograph would be the fuller, and the police reporter's record the more powerfully truthful. The difference rests simply in what we call *Fine Art*. It is that which lies at the root of a great novel, play, or history. It is *thoughtful* as opposed to automatic work.

You cannot expect to pour out if you never pour in, whether you be philosopher or poet, painter or photographer. Some good and worthy people suppose thinking comes to them as Dogberry thought reading and writing did, by Nature; and in like way certain photographers think pictures come to them by nature too. For they imagine that nature will supply all they want without their aid. Therefore all they seek to do is to let their lenses reflect on their duly prepared surfaces, landscapes, buildings, or living faces and figures. So we have in photography face portraits which are mere expressionless masks, whole-length figures which are only front elevations of men or women, and rigid cast-iron-looking landscapes which sacrifice to mere outer accuracy of form all the poetry of sunshine and air, all the glories of space, all the breathings of vitality, every retrospective and introspective suggestion of life and motion. There are no resting-places for the birds in their foliage, no little cavernous recesses in which the flickering cast-shadows and merrily dancing sunshine are at play, in those dark, solid-looking masses of twigs, boughs, and leaves, which seems as if not only the lightest breeze that blows, but the strongest blast would fail to make them rustle, quiver, or bend, as if not a leaf was moveable, not a bough bendable. They do not therefore make you hear the whispering air, or feel the glowing sunshine, or sniff up imaginary perfume from the perfumes of new-mown hay or garden flowers. They have risen and fallen rather than rising and falling waves on their seas and rivers. Their shadows are flat-dead surfaces with very little transparencies and no reflected lights and intermediate tones. So they seem all alike, instead of being variably influenced by air and light in various and changeful conditions. And all this is not because the photographer's lens, plate, and printing frame are utterly unsuited to the produc-

tion of such works—for under other conditions they have produced them—but because the automatic producer was a mechanic and not an artist, a hand not a head, a mere human machine instead of an intellectual student; appealing not to everybody's recognition of common-place, uninteresting facts, but to feelings through the imagination.

There is no necessity of my saying all this to the accomplished photographic artist. I write for beginners and for those who have not yet recognised the art power photography now gives them, oh! how much more fully than it ever did before!

I once knew a camera-man, an amateur of rare merit (in Australia) who would never have believed that all the elements of a picture could be found in a photograph—air, light, sentiment, feeling and space with poetical or imaginative suggestiveness—if he had not once by pure accident produced a real picture. Then he began to think of the how and the why of its coming. Then he grew bitter and angry with himself because, try as often as he could, this same delightful result obstinately refused to come again. Then he began to study the picture he was so proud of, to see wherein resided its great superiority. Then, vaguely and dimly enough at first, he began to see that it was superior by virtue of those qualities and values which a good painting has. And then that which came once in the course of ten years' experience came commonly, by dint of observant searching and artistic managing.

He has since then carefully and profitably read numerous works on art (practical and theoretic), notably Ruskin's. He has learned by studying the productions of great masters the secrets of their craft—is now a thinker instead of an automaton, a man instead of a process. All honour to him, say I, and all honour to those who will go and do likewise, elevating instead of degrading their art, raising it to the highest level instead of confining it to the lowest.

I no longer practise photography, having drifted away from its professional practice before the age of wet plates and long exposures had disappeared, but I am as enthusiastic a lover and admirer, and as earnest a student of its productions as I was thirty years ago, when I wrote articles on it in all the photographic journals and some of the art journals, read papers before photographic societies, plunged, with my armour on, into the thick of controversial battles, and came out of them wounded, and with my weapon broken, or victorious, with the enemies shattered, flagstaff waving proudly in my grip. Just imagine *now* having to fight to put down such things as white paper skies, and the black paper of under-exposed shadows, against the "combination" in one photo of sunset and noontide shadows, against "composition" photographs wherein the introduction of figures taken in a partially darkened studio figured in landscapes photographed in open daylight (but I have seen this in paintings), together with many similar abominations, all introduced as artistic improvements by photographers trumpet-tongued in their own glorification, and obstinately pugnacious for the preservation and defence of the very defects which photographers afterwards arose against almost as one man! Phew! But it was hot work, trying work, often as I laughed at the bare idea of having to do battle against such comical antagonists, of having to point out such very palpable mistakes to those who, for a time, obstinately refused to perceive them, or abandon them in practice.

But all these things, are they not duly recorded in the early reports of the South London Photographic Society, which I had the honour of founding, and of which I was for some years "Hon. Sec."?

In these preliminary observations there is not much that is new to be said, but because it is true, I hope, you will patiently endure some repetition. Other matters in reserve for future papers may be newer and fresher to you. In them I propose to deal with such things as focussing and pictorial effect, choice of subjects or models, on subordination, domination, harmony, and contrast, on exposure and development from an artist's view point, on treatment of subject, and on aerial effect, dealing with each subject from practical points of view.

(*To be continued.*)

Carbon Printing.

By W. E. Debenham.

Mr. Debenham said carbon printing was a large subject, and one which included more than he would have selected to deal with in a single evening, but the late Mr. W. Bedford had promised to give a demonstration of the process, and as Mr. Bedford had unfortunately been taken from them, he (Mr. Debenham) had undertaken to take the matter up. Carbon printing went into a good many ramifications which he did not propose to follow on the present occasion, and he simply intended to go through the process as it was likely to be worked by those who had not hitherto been accustomed to use it. The object of these demonstrations had, he thought, been misunderstood in some quarters; he had, for instance, received a letter asking whether he was going to bring forward anything new, in which case his correspondent would like to come and see it. He did not think these demonstrations were intended to show anything new, but rather to bring certain branches of photography under the notice of members who might not have practised them, and to make it easier for them to start working such branches. There were many members who confined themselves to one or two particular lines, perhaps exposing and developing gelatine plates, and possibly printing in albumen or gelatine, but who would like to undertake other work if they could see their way to getting a fair start without too much difficulty, and it was to smooth the way for such as those that the demonstrations had been instituted. The process under consideration was called carbon printing, but it was not at all necessarily or essentially carbon that was used, and it was often and perhaps better called pigment printing. There were certainly other pigment processes, but the term "pigment printing" described this fairly well. The essential principle of it was this, that bichromated gelatine when acted upon by light underwent a certain change, in virture of which the gelatine was no longer soluble in hot water. If, therefore, with the gelatine were locked up a certain pigment—and carbon was originally chosen as being unchangeable and permanent—by exposing a part to the light and washing away the rest it was obvious that some kind of a picture would result, and that was the origin of the process. In most prints, so-called carbon, carbon was still used largely, some other pigment being added for colouring, because the colour of carbon alone is obtained in lamp black or Indian ink, was not to many people so agreeable as when some other tint was mixed with it. There was this peculiarity about carbon printing, that it was necessary to wash away, or "develop," as it was termed, from the side of the film which had not been exposed, and consequently a reversed image was obtained. The paper upon which the gelatine was coated was simply used for a convenient support for the sensitive material, which would be affected by light to a greater or less depth according to the degree of transparency of the negative. If, then, the print were at once placed in hot water for development, those parts which had been affected by exposure to the greatest extent would remain on the paper, but where the film had only been rendered insoluble to a slight depth, the water would get underneath and cause those portions to float away, consequently there could only be two tones—black and white—and the half-tones would disappear. In order, then, to secure the half-tones, the unaffected gelatine must be washed away or developed from the side next the original support. That was at first done by cementing the sensitive surface with india-rubber to paper or other support, when, the original support being removed, the development could proceed from the back, and a half-tone picture could be produced. This, of course, gave an image reversed side for side, and the same was the case with ordinary carbon printing to-day, for by developing from the side which had not been exposed we got a reversed image, in which the right-hand side became the left; for some purposes to which carbon printing was applied this was immaterial. The process was constantly used for printing enlargements, and it was only necessary to make a reversed negative for the enlargement—which could be done easily enough in a camera—and that negative, which, if printed in platinotype or silver, would give a reversed image, would in ordinary carbon printing give an image in its proper position. Where the carbon tissue was placed on the paper and developed direct, it was called "single transfer." It was found that it was not necessary to use a cement for the purpose of fastening the tissue to the paper support. If the tissue

were moistened with water so as to cause the gelatine to commence to swell, and if before the gelatine had swelled to the full, it were placed in contact with an impervious substance such as glass, and squeegeed on to it, the gelatine would go on absorbing the water between the film and the glass, and in so doing it would be cemented on to the glass. Single transfer on glass might be, and was accomplished in that way for the making of carbon transparencies. Mr. Debenham then proceeded to demonstrate the process, sensitising a piece of pigmented tissue in a solution of bichromate of potash. He said he used the solution somewhat weaker than was usually recommended, namely, an ounce of the salt to a quart of water, and sometimes even weaker than that. If the crystals were placed in the bottle in a muslin bag with the top of the water just above them, they would easily dissolve, and the muslin would also filter the solution. The material called carbon tissue sensitised in this instance was "red chalk tissue," pigment mixed with gelatine and spread upon paper for convenience, and in that state it was not sensitive. The tissue was sold ready sensitised, but he preferred to sensitise it himself as required. Ready sensitised tissue would keep somewhat longer than home sensitised, but would not print nearly so quickly. The main point, however, was that one was obliged to use up a quantity of ready-sensitised tissue or it would become useless, while if one sensitised the tissue one's self, only just as much as was required need be prepared. The tissue was sensitised by complete immersion. He had not found that the addition of ammonia to the bichromate solution improved the keeping qualities of the tissue, but if the bichromate contained an excess of chromic acid, ammonia would no doubt prove advantageous. The sensitising could be done in a good light, the tissue being scarcely if at all sensitive while wet. The immersion could be continued until the tissue was pretty well softened, and it should not be so long as to cause the tissue to curl back upon itself, or it would be inconvenient to work. Upon removal from the sensitising solution, the tissue was squeegeed on glass to get rid of superfluous moisture, and it was generally advised to then remove it from the glass and hang up to dry. Mr. Debenham, however, thought it better to leave the tissue to dry in contact with the glass. The surface was finer if dried in contact with the glass, and being finer it more perfectly rendered all the minute details of the negative, and as it need not be stripped from the glass until required for use, the surface was kept from the air. Also if dried in dry weather, the tissue was apt to curl very much, but if dried on the glass it was flat and convenient for use. When it was intended to dry the tissue in contact with the glass, it was necessary to prepare the glass by rubbing it with talc, or the tissue would stick to it. The secret of this operation was that the talc must be rubbed in hard, mere dusting on and wiping off would not suffice; it must be rubbed in thoroughly, and then the talc may be apparently all wiped off. If this was done carefully, the tissue when dry could easily be stripped from the glass. The wet tissue was laid on the glass and covered with a piece of waterproof sheeting, and squeegeed first from the middle to one end, and then to the other. If this was done at night the tissue would be d y and ready for use the next morning. He had sometimes got it ready in an hour by placing it at a certain distance from a fire, and of course away from the light; a gas stove with a kettle on it might be used. The paper being sensitised and dried, the next step was the printing, and in this respect there were one or two peculiarities about carbon printing. In the first place, if one were merely to print on a piece of carbon tissue as on albumen paper it would be found that it would not stick to the paper for development Where dark portions of the picture came near or up to the edge of a carbon print the gelatine had so little adhesiveness that it would come off unless surrounded and held round its edges with some gelatine which had been less acted upon; therefore what was called a "safe-edge" was used in carbon printing, the margin of the negative being sometimes painted out and sometimes blacked out with a cut-out mask. Mr. Debenham showed a sample of a double safe-edge which he used, consisting of a folded cut-out mask of opaque paper for placing on both sides of the negative, the opening next the film being very slightly larger than the other, and marked with a line to show the exact position to be occupied by the tissue. If the simplest form of safe-edge was used, paint or an opaque mask on the film side of the negative, any dark part of the picture near the edge would be as a vertical wall of black on the surface of the paper or glass on which it was developed, and the film left by the unexposed part of the tissue might not be strong enough to support that wall, and the water would consequently get under it and wash it up. If, however, the safe-edge were outside the negative, instead of between the negative and the tissue, the wall of black near the edge of the picture would take a slanting direction, and offer a greater resistance to the water in development. If the print is from an inverted negative all that has to be done is to develop it on a piece of "single transfer paper," which was an article of commerce—that is, if the resulting print was to be on paper. The tissue had to be soaked in water until a certain quantity of water had been taken up, but not all that it would absorb. If it remained in the water until it had absorbed all that it would absorb, it would not take up the water between itself and the surface upon which it was to be developed, and consequently there would be no adhesion. The tissue must be left in the water until it became tolerably soft, or else it could not be got in good contact, but he thought the sooner it was out and squeegeed down the better. It was not always absolutely necessary to blot off the tissue and its adherent support, but it was rather better to do so, as the water was thereby removed and the tissue left with a greater appetite for taking up what water there might be between the two surfaces so as to cement them together. Mr. Debenham then proceeded to squeegee a print on to a piece of finely ground opal glass for double transfer. The print, he said, would be developed on the glass but not left there; it would be stripped off on to a piece of paper and so would present itself in the proper position, right side to the right. The double transfer process was necessary for landscapes, and in fact for most purposes where a reversed negative was not used. The glass or other support in double transfer had to be prepared by rubbing on a very small quantity of a solution of beeswax and resin in turpentine, otherwise the print would not strip. The exposure had no visible effect on the tissue, and it was necessary to ascertain the time of printing by means of an actinometer. He thought the most convenient form of this instrument was that introduced by himself in 1877, and now, with a trifling alteration, obtainable as "Sawyer's Actinometer." But he particularly wished to show how to work the process with as few appliances as possible, and to this end he described a simple form of actinometer, all but the head of a portrait negative of average speed in printing being blocked out and that head used as a guide by printing on albumen or gelatine paper. The carbon tissue would, with a negative of equal density, be sufficiently exposed in from one-third to one-fourth of the time necessary for a silver print. The print and the single transfer paper having remained for a few minutes were placed in hot water. Mr. Debenham remarked that he did not use thermometers in this process, not because he did not like exact measurements when they could be had, but because different tissues varied as to the heat they required, and the same tissue would vary according to the time it had been kept. When the original support of the tissue could be slightly shifted sideways by pressure with the fingers, it was ready for stripping, during which operation the whole should be carefully kept under water. After a little while the hot water could be flung over the print, when the unaltered gelatine would be washed away, leaving the picture on the transfer paper or other support. Until the safe-edge had been all washed clear it was evident that development had not proceeded far enough; it would not be completely removed, and by looking closely a certain amount of deposit could always be seen. The print developed appeared to have been somewhat over-printed, and Mr. Debenham remarked that there was some control in such a case by using hotter water and prolonging the development, which was done, and eventually development was stopped by changing the print into cold water. The prints would not bear treatment with boiling water. The print which had been squeegeed on to opal glass having been developed in a similar manner, was afterwards placed in alum solution to harden the film. In the case of double transfer the plate or flexible support or whatever the image was developed upon, was treated in the same way, but after removal from the alum solution and washing the print was placed in contact with paper prepared with gelatine, and when dry it would leave the double transfer paper and adhere to the final support. In what was known as the Lambert-type process a piece of plain or opal glass was waxed and coated with collodion and the print developed upon it when dry, it was spotted with oil colour and then transferred, so that there was no spotting or other work upon the glossy surface of the print. It had been said that the action set up in the tissue by exposure to light was continued in darkness, prints partly exposed one day and developed the next, showing no signs of under-exposure. This had been called the continuing action of light. It might be too that as the whole tissue was becoming less soluble, the more a certain amount of exposure would suffice to harden it.—*Photographic Journal.*

Dark-room Illumination.

The question of what kind of a light to use when developing plates is too often dismissed without proper consideration. "Anything red will do" seems to be the prevailing motto, and the dealer's cheapest piece of red glass is accepted, in the firm belief that it will prove an absolute safeguard against fogging in the dark-room.

Now, this is very far from being the case. Most red glass admits the passage of some of the blue rays, which are, of course, detri-

mental to the plate. Out of a large sheet of copper-flashed glass often only a few square inches will be found available.

One of the easiest ways of testing red glass is with the spectroscope. By this means the quantity and kind of rays passed by it can be readily determined with absolute certainty. The average photographer, however, is not possessed of one of these instruments, and, even if he were, it is doubtful if he would know how to use it.

It is, however, a very simple operation to test in other ways the safety of a light, and yet how seldom is it done. One of the best methods we know of, after the spectroscope, is to expose a portion of a plate to the rays of the lamp for a given time, at different distances, and then to develop it with a moderately concentrated developer. Care must be taken not to expose the plate to the rays of the light during development any more than is absolutely necessary, in order to prevent fogging from this cause and wrong conclusions being drawn in consequence.

It is also advisable that the development in each case should be conducted with the same strength solution, for the same length of time, and that it is not pushed to such an extent as to produce chemical fog.

In making the tests, a trial of five minutes will be ample, as it is rarely that a plate during the course of development will receive this amount of exposure to the direct rays of the light employed.

Having a portion of the test plate unexposed gives us a check, by means of which we can determine how much of the fog, if any, is due to the developer or plate and how much to the light, in case the precautions concerning development have been neglected.

Without this check it would be almost impossible to trace it with certainty to any one cause.

Having settled once for all the question of the safety of the light, with both ordinary and orthochromatic plates, the latter, of course, being more sensitive to the yellow and red rays than the former, the quantity of illumination compatible with safety is the next question. As a general rule have as much light in your dark-room as possible, as it will save many annoying accidents, besides lessening the strain upon the eyes to a considerable extent. When making the tests previously referred to, therefore, bear this question in mind, and have the lamp you are testing and intend to use turned up to its full extent.

It frequently happens that an emergency arises when it becomes necessary to replace a broken glass or chimney under circumstances which will not permit of a test. In cases of this kind it is well to cover the tray while developing with another larger one, or piece of pasteboard cut to a suitable size. Indeed, many workers habitually do this as an additional safeguard against possible mishaps.

The beginner is usually tempted to take his plate out of the developer and examine it under the light much more frequently than is at all necessary. There seems to be a strong temptation to study the detail and density with the negative held close up against the lamp. Now, it should be remembered that the intensity of the light is greater just here than at any other point, and the danger of fogging consequently increased. Moreover, the glass usually slides into frames which are by no means absolutely tight, and a close examination will frequently reveal quite a number of rays of white light coming from these joints in just the place where the plate is likely to be exposed to them.

Refrain, therefore, from holding the plate up to the light any oftener than is absolutely necessary, and, when doing so, hold it a little distance from the lamp.

Perhaps the next question in order is the kind of light to use. Practically we have three sources to choose from—gas, oil, and electricity.

First in the order of convenience, cleanliness and general adaptability undoubtedly comes electricity. In the larger cities this may be readily obtained from any of the numerous electric-lighting companies, and no matches, no odour, and the minimum of heat are certainly strong recommendations in its favour. When it is not feasible to run the wires to the dark-room, it will often be possible to use a battery as the source of electricity. Two kinds are available —storage and primary batteries. The first need frequent recharging, while the second do not require renewal so often, but are somewhat more "mussy" to handle. Two or three of the first will usually be sufficient for a five-candle-power lamp, while usually five of the primary batteries will be required. There are on the market compact forms of the primary battery with lamp attachment complete, and they answer this purpose very well when new. Their care, however, is something which requires a certain amount of knowledge and experience, and the average amateur had better confine himself to oil or gas, if the alternative is to make his own electricity.

Gas, of course, comes next, and a very convenient way in which to use it is with the paper sodium cartridges, which are slipped over the top of a Bunsen burner and give an intensely yellow, monochromatic light. A dark, amber-tinted chimney usually accompanies the outfit, and the light afforded is both pleasant to the eyes and safe for the plate. This form of light, however, develops considerable heat, and for confined dark-rooms is hardly advisable.

Last we come to oil, and properly handled it serves its purpose most excellently. Any lamp, to burn well, and without odour, should be kept reasonably clean, and the dark-room lamp is no exception. Two points concerning its construction should be noticed: First, that it does not leak white light, and second, that the wick may be raised or lowered from the outside, the latter being a more important consideration than it would seem at first sight.

It is always advisable, where possible, to place the light outside the room. This at once does away with over-heating and vitiating the atmosphere. Where this is not possible, try and arrange the lamp so that the current of hot air rising from it will pass through a chimney to the outside, and have an opening near the floor of the room to permit the ingress of fresh air. A moderate degree of ventilation is thus secured, and the room becomes less like the "sweat-box" it so frequently resembles.

A frequent practice is to place the light in front of the worker, so that the rays from it are reflected into his eyes in the most direct manner possible. A little common sense applied to matters photographic will often work wonders, and it is strange to see how many otherwise unintelligent men will continue in the paths of thoughtlessness simply from force of habit. Most of us, who are possessed with a modicum of intelligence, would refuse to read with a light in front of, and nearly on a level with our book, knowing well the great strain to which our eyes would be subjected.

Why not follow this out in the dark-room, by placing the lamp to the right in such a manner that the light will be directed across us and towards our left? The plate upon which we are working will then be illuminated just as well as in the previous case, and the reflected rays, instead of blinding us, will pass harmlessly off and be absorbed by the black wall on our left. Not only this, but the whole shelf upon which we are working will be illuminated, and the graduate containing the developer will lose its marked tendency towards the sink so frequently and painfully noticeable at critical moments.

The advantages of having the interior of the dark-room painted black are very great. In many situations it is almost impossible to insure absolute lightness of joints, and a few rays of white light frequently make their appearance after we have become accustomed to the general dimness of our surroundings. With white or light coloured walls these rays may be reflected with serious results, while on a dull black surface they are absorbed, and only at the spot when they first fall would a plate be fogged.—*Anthony's Bulletin.*

Photographic Rubber Stamps in Half Tone.

BY H. KRAUS.

PROFESSIONAL photographers whose business has suffered from close competition, low prices, or other reasons may find the manufacture of rubber stamps direct from ordinary photographs a good paying speciality, the more so as it requires but a small outlay for special apparatus, *materials, etc.* The following is a full description of the process, which should enable any practical man to work it successfully, or even improve on it, as my own *results are not* quite perfect yet. The process in its outlines consists mainly of making a reduced half-tone transparency or positive from an ordinary photograph; this is printed on a gelatine film, sensitised with bichromate of potassium, thus producing a washed-out gelatine relief, from which the rubber stamp *is made, using it as* a mould.

The first step is to copy and reduce the subject or photograph, and make a so-called half-tone negative of suitable size. This can best be done by the wet collodion process, but Carbutt's process plates, sensitometer 12, can also be used. The lights or dots of such a negative must be opaque, while the shadows must be clear glass. In order to obtain the half-tone effect or grain the negative must be exposed under a line screen, which must be placed in the plate-holder or kit in front of the sensitive plate, but at a small distance from it. Line-screen plates and kits arranged for the purpose can be purchased from various dealers who furnish materials for photo engravers.

From this half-tone negative a positive or transparency is obtained in the usual way, either by contact *printing or in the camera.*

The next step is to coat small sheets of paper—8 by 10 is large enough—rather thickly with a twenty per cent. solution of gelatine, mixed with a little India ink; when dry this paper keeps any

length of time; before use, it must be sensitised in a solution of 100 parts of water and from six to eight parts of bichromate of potassium or ammonium, by immersing it in this bath for about two to three minutes, until the paper lies flat, it is then taken out, laid on a sheet of glass, and the surplus of the solution squeezed out by laying a piece of rubber sheeting on top and applying a rubber squeegee; the paper is then hung up to dry in the dark and is ready for printing. All these manipulations will be familiar to any one who has practised *carbon printing*. In order to uniformly coat this paper with the gelatine mixture I proceed as follows:—Take a piece of plate-glass a little larger than the paper, and near the edge glue three or four thicknesses of narrow strips of cardboard to form a frame or tray about 1-8th in. high. Now soak a sheet of paper in water, blot it off between blotting paper, and lay it on the piece of plate-glass inside of the cardboard frame. Now pour the gelatine mixture on the paper, filling the whole space, roll a glass rod which rests on the cardboard frame over it; this will make the film of uniform thickness; of course, the plate-glass must be put on a levelling stand first, which may consist of a stout board about six inches larger than the plate-glass, with three large screw-eyes for adjusting it. After the gelatine coating has set, the paper may be removed from the glass and hung up to dry, and a new piece may be coated. The sensitised paper, when dry, is next printed under the half-tone positive; this can be best done in direct sunlight, for from five to ten minutes, and with the sun at right angles with the printing frame. In order to do this correctly I drive the point of a pin into the printing frame outside, and have it perpendicularly, and then place the frame in such a position towards the sun that the pin will cast no shadow.

The printed picture is next transferred to a zinc plate by immersing both in cold water and squeezing them together, and then putting them under pressure for about five or ten minutes. Next put the zinc plate with the paper print on it in a tray with hot water. You will soon be able to remove or strip off the paper, and by continued use of hot water wash out all the soluble gelatine, while those parts acted on by the light will remain insoluble. The last is to apply an alum bath, and, finally, soak the film in alcohol, dry it, and the half-tone relief plate is ready.

Next I will describe another and novel method of producing such relief plates, for which credit must be given to Mr. Henry Sutton, of England, which effects a great saving of time, and in which the negative itself forms the mould from which a *rubber stamp is taken*. Insert an ordinary gelatine dry plate, or, preferably, a cut celluloid film in your plate-holder, and place a line screen over it, expose and develop it with pyro or any suitable developer in the same manner as an ordinary negative, and, after fixing, rinse under the tap, then remove the superfluous moisture with a piece of blotting paper. It is then laid still wet on a flat dish, which is placed over an oil or gas stove, and subjected to heat for about five minutes, while the gelatine film is drying. The grain caused by the interposition of the line screen will rise into relief. That is those parts of the negative *that have been acted upon* by the light.

All that remains now is to tell how a rubber stamp can be obtained from such a gelatine mould. To photographers who wish to do this part of the work themselves I would suggest to purchase a complete outfit for making rubber stamps, which is manufactured and sold by a firm in New York City, with full instructions, for the price of 15 dols., and which consists of a very compact machine or press, called the Vulcanizer, a chase, type plate, set of types, sheet of raw rubber, vulcanizing mixture, thermometer, etc. Those who do not care to make this outlay can simply send their moulds to any rubber stamp manufacturer, who will make them a rubber stamp (midget), with self-inker, bottle of ink and brush, all for the small *sum of fifty cents*.

Before concluding, I will mention still a third method of producing photo rubber stamps, which is quite original with me, and on which I am at present experimenting. This method consists of transferring the exposed gelatine relief paper direct on a sheet of vulcanized rubber, and developing the relief on it. I next coat the back and the sides of the rubber sheet with some varnish or gelatine, and immerse the whole in a solution or substance which will dissolve or eat away the rubber, but without attacking the gelatine coating. This liquid, for which I have not yet succeeded in finding the proper ingredients, should act or perform the same work like the etching fluid used in making zinc or copper plates. Should any one interested in this kind of work be able to give me some hints in this direction I should be glad to hear from him.—*St. Louis and Can. Photo.*

Cementing Celluloid.—Moisten the edges of the article to be made or mended with acetone, or, better still, a solution of celluloid in acetone (the varnish sold by several makers of films for varnishing negatives or positives on films), pressing them together while wet, and in a few minutes the joint will be perfect.

The Plymouth Convention.

REPORT OF THE DELEGATES OF THE PHOTOGRAPHIC CLUB.*

THE Photographic Convention of 1893 has come and gone. To sum up its results in a few words, we may say: Socially it has been a success; from a photographer's point of view, a failure.

Without precise instructions from the Club as to our duties, we have concluded to state our personal opinions for what they are worth, and to give you a brief diary.

The actual programme has doubtless come before you, the press having given full publicity to it, as also to the Convention papers Our part we conceive to be to give you a personal report.

To us the most noticeable feature was a poor attendance. This is a matter for regret. That a gathering which promises and supplies such exceptional opportunities for recreation and intercourse should not be able, out of the thousands of amateur and professional photographers, dealers, etc, to attract more members, is a matter which merits the serious consideration of the Committee of the Convention. We are inclined to attribute much to the date of meeting, and to hold it a cardinal error to have fixed upon one of the busiest weeks of the year, the week of half-yearly accounts, when a majority of business men are intent upon the adjustment of their books. An inconvenient date is not only unfortunate for those unable to go at such a time, but it is even more so for others who, intending to meet old friends, attend and are disappointed.

There is still another grumble to which, as Englishmen and your delegates, we feel entitled. It is the continued folly of attempting to do too much in one week—too much on each day. The Committee should have experience enough by this time to know that photographers do not want a week of hurry-scurry, but a holiday, and also that most photographers like leisure and opportunity to take pictures when they take their pleasures, even if they take them sadly—the pleasures, not the pictures, which, by the bye, is not characteristic of Conventioners. This year the opportunities were too few, and this was the more tantalising because the pictures were there in abundance, and only leisure was required to work. In fact, an 1893 Conventioner's diary might read as follows:—

Monday.—Journey down. Pleasant day in train. Gloated over a large supply of plates.

Tuesday.—Boat excursion. Rain saved plates.

Wednesday.—Listened to Convention papers. No exposures, but exercised changing box in the bedroom at night.

Thursday.—Excursion through fine country. No stops, so saved plates.

Friday.—Good boat excursion. Reaction too much. Shot plates at everything and anything.

Saturday.—Rail home, with unexposed plates.

Result.—Severe economy in plates.

And now, abandoning this sad hypothetical case, we descend to the Conventional—one week's work.

Monday.—We arrived just in time to dress and rush to the open meeting and reception. This function, honoured by the presence of the Mayor of Plymouth, was held in the Art Gallery, the rooms of which, though small, are suitable and convenient. Here was contained the Exhibition, without which—but for some reason which to your delegates is inscrutable—no Convention is complete. About fifteen firms were represented, and enlargements predominated. There were no noticeable novelties, and it would not have been a matter of any difficulty to select the best exhibit. The Mayor welcomed us in a hearty speech. Then the general President of the Convention, Mr. George Mason, followed with his address—practical, lucid, and Scotch. Afterwards lantern-slides were shown upon the screen. Amongst the exhibitors were Major Lysaght, Messrs. York, Cembrano, Hindley, Welford, etc., and many of the slides were exceptionally good. After the formal meeting was closed, an informal adjournment of the male Conventioners was made to one of the local hotels. The fragrant weed and social glass, the merry quip, jovial song, and the tall-talk (and still growing) yarn made all present forget that time was flying, and that the pleasant labours of the morrow called for refreshing sleep.

Tuesday was to have been the day of days, when, as the guests of the local clubs, who treated us most hospitably, we were to have enjoyed the pleasure of a steamer trip in the waters in and about Plymouth. Unfortunately, rain interfered, and somewhat marred the excursion. Still, we adhered to the programme, and it is high testimony to the efforts of Mr. Handsford Worth, the local secretary—to the beauty of the surroundings and to the jolly dispositions of Conventioners—that, the rain notwithstanding, we enjoyed the trip.

Wednesday was devoted to business meetings, photographing the group of members—always an important function with Conven-

Read at the Club, August 2nd, 1893.

tioners—and the reading of papers. Threatening at first, the weather became finer as the day wore on, and, with its change in mood, Conventioners were drawn away from serious considerations to enjoy the sunshine and the surroundings. The photographing of the group concluded, and lunch discussed, papers at the Art Gallery became the order of the day; but the Gallery was sultry and oppressively hot, and the attendance of members—never large—became smaller by degrees and beautifully less, whilst the temperature rose by tens of degrees.

We think that, if the Convention is to remain anything more than a social and photographic outing, the arrangements for the reading, discussing, and reporting of papers at the Convention will have to be revised. Except so far as the publicity of the press is concerned, the meeting for the reading of the papers was a fiasco. Too many were attempted; consequently it was a rush against time. The discussions were inadequate, and the reports of the discussions, to our mind, very incomplete. Why cannot the Convention issue an official report of its own, after the manner of the Photographic Club?

On the Wednesday evening there was another reception—at Devonport this time—another lantern show, and more papers. The first discussed, *a la* tea and coffee, the papers taken as read, and the lantern show, a lucid interval.

Thursday.—The Royal Wedding-day. The favourite excursion was that to Totnes by rail, thence by steam launch down the Dart to Dartmouth, thence by rail to Plymouth As a trip to see the country, charming; but, for photographic purposes, the excursion was disappointing. There was no opportunity, save a brief one in Dartmouth after lunch, for taking pictures. Like the restless spirits of which we read in Dante, we were driven at high speed from place to place; no photographic opportunity was ours.

In the evening there was a meeting for papers, but the wedding festivities on the Hoe and in the Sound prevailed. Like truth, which is also said to prevail, they were great. The view from Plymouth Hoe is a lovely one at all times, but on this special occasion, with the ships illuminated, bonfires on the surrounding hills, search-lights from the men-of-war in the bay, and jollity all round, the sight was most impressive.

Friday.—Those excursions divided the Conventioners. Those who with your delegates decided to visit the Cuttewater Hooe Lake and the Sound had the most pleasant excursion of the whole Convention. The steamer at our disposal was commodious and convenient, and we had ample opportunity of making exposures to our hearts' content; we thoroughly enjoyed ourselves.

In the evening the Convention dinner was successfully carried out. Afterwards music and recitations completed a very pleasant and enjoyable day and practically brought to a close the 1893 Convention.

Saturday.—All excursions were abandoned for this day. This gave us the opportunity to roam about the quaint streets and quays of Plymouth as we liked, and we obtained some of the best pictures on this last day.

In bringing our report to a close, we hope to see the Convention strengthened by certain alterations in the arrangements.

Besides the points to which we have already alluded as requiring attention, viz., a more convenient date, an official or authorised report, we think there is still too much attempted in the time at the Convention's disposal, too many items of interest crammed into the week. As regards the excursions, the general Committee might make suggestions to the local Committee embodying the general experience of previous meetings and the requirements of the members. A local Convention Committee must always, and of necessity, be inexperienced as far as the requirements of Conventioners is concerned, for we meet but once and then pass on. But in the general Committee wisdom must have accumulated by now! In addition, we believe it would be to the general advantage if the business portion of the Convention—by which we mean the papers and discussions—were taken all together, *de die in diem*, instead of being sandwiched, as now obtains, between distracting entertainments.

And now, in conclusion, let it not be said that we are not grateful for the efforts made to please us. The energetic local Secretary, Mr. Handsworth Worth, and the local societies whom he represented, are to be congratulated on having beaten record for hearty and well-directed hospitality. Towards our Plymouth hosts and friends, if they will permit us the familiarity, we can only have sentiments of gratitude for the successful efforts which they made to entertain us, and their kindness will ever be one of our most pleasant recollections.

We have but one word to add – a member of this club is the Hon. Secretary of the Convention. Mr. Cembrano is the right man in the right place, and to him the success of the Convention is largely due. We find it a pleasure to be allowed to express what we believe is the universal sentiment amongst Conventioners, hearty thanks for his energetic work in the past, and the hope that he may long stage-manage our photographic holiday.

We trust, gentlemen, that we have carried out our delegation to your satisfaction, and we hope that next year you will be able to dispense with such services by attending the Dublin Convention *en bloc*.

(Signed) J. GUARDIA,
S. HERBERT FRY.

Holiday Resorts and Photographic Haunts.

FOUR WEEKS IN BRITTANY.

BY J. D. LYSAGHT.

ANYONE in doubt as to the locality to select for a photographic trip cannot do better than decide on Brittany, where he will find abundant material for his camera.

A recent writer says that in many respects Brittany and its inhabitants are a hundred years behind the age. This statement is certainly justified so far as the hotel-keepers are concerned. They have not yet developed that rapacious spirit too common in tourist resorts, so at present a trip to Brittany may be made at about half the cost of a similar trip to, say, Switzerland.

Brittany can be readily reached by steamer direct from Southampton to St. Malo, or *via* Jersey from Weymouth. The latter, being the shorter sea passage, is to be recommended to those who do not delight in the motion of the waves.

The old walled town of St. Malo is well worth a visit.

Cancale, a village devoted to the oyster fishery, can be reached by means of a 'bus, which allows of sufficient time to photograph the various objects of interest before returning to St. Malo.

No one should omit a visit to Mont St. Michel, where a comfortable hotel, presided over by Madame Poulard, adds much to the pleasure of a stay.

Space does not permit of anything like a description of what is to be seen at Le Merveil, as the French are fond of calling a place they are deservedly proud of.

The Government are engaged in many necessary works of repair and restoration, and the church is filled with scaffolding. This and other difficulties prevent satisfactory pictures being obtained.

Ancient Vitre was the next place visited. The town is remarkable for the number of mediæval houses in good preservation that adorn its streets.

St. Brieuc also possesses a number of good specimens of the architecture of the middle ages. Here are to be seen some remarkable specimens of the caps worn by the Breton women.

Legue, the port of St.. Brieuc, affords some interesting studies.

Morlaix, one of the largest towns in this part of Brittany, is famous for its Grand Rue, composed almost entirely of splendid specimens of fifteenth century architecture.

At the Grand Hotel a dark-room has recently been fitted up.

Some days may be profitably spent at Morlaix, there being numerous places of interest to visit within reasonable distance.

Principal amongst these are the churches of St. Thegonnec and Guimilian, each with a remarkable calvary, that at the latter place being remarkable for the number of tableaux, depicting the whole life of Christ.

St. Pol de Leon and Roscoff can be visited in a day. The former has a church, called the Creistar, remarkable for the height and elegant proportions of its spire. The cathedral of St. Pol is well worth more than a passing visit. Roscoff, a small seaport, presents some good subjects, craft of various descriptions, figure studies, etc.

Passing Landernaw, a town of much interest, Quimper is reached. The cathedral is remarkable in many ways, notably for the extreme obscurity of its interior, rendering a photograph of it an undertaking of some difficulty.

The market here was numerously attended by the country people from the surrounding districts, wearing, in many instances, quaint costumes. This was more general with the women than with the men, of whom very few now wear the curious dress of the country.

Amongst the other towns visited were Quimperle and Auray. The former is situated in the most picturesque part of the country. A dark-room will be found at the Hotel des Voyageurs.

Auray is uninteresting, but from it can be visited the magnificent modern church, St. Anne d'Auray, dedicated to the patron saint of Brittany. (Photography in the church is prohibited.) The remarkable menhirs and dolmens of Carnac are within easy reach by rail, which extends as far as Quiberon, a seat of the sardine fishery.

By a particularly slow train, travelling through an uninteresting country, Dinan is reached. The writer was compelled to remain here longer than he had intended, but the stoppage enabled him to secure some of the most successful of his views.

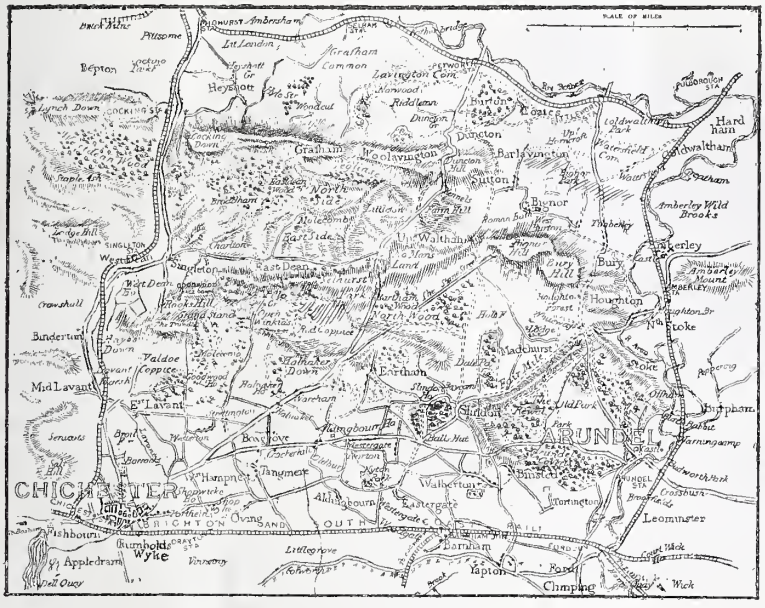
At Dol is the cathedral of St. Sampson, a fine specimen of Gothic architecture; and near Dol is Mount Dol, from which on a clear day a wide expanse of country can be viewed, with Mont St. Michel apparently rising from the distant sea.

THE WEST SUSSEX QUADRILATERAL.

By the Editor.

It is, fortunately, an established custom that even such an unimportant person as the Editor should have a holiday, and it might be presumed that after twelve months' work connected solely with photography, a brief respite would not be amiss. Such was certainly my feeling, and consequently the first few days of my holiday was spent in doing nothing and doing it energetically, if lying on the softest spot of Brighton's pebbly beach and reading the daily paper and smoking can be called doing nothing. But after a few days of this, somehow the natural instinct turned towards a camera, and possibly also the pebbles got harder, or it might have been that one tired of being perpetually importuned to "Have a likeness took, sir? Beautiful light this morning, sir, and well grouped too, sir;" or else it was the awful reiteration of "Diesy, Diesy;" or the miserable little boy—there are plenty of them really, but only one little wretch who offers, nay, almost forces you to "Buy, a tin of sweets, sir?" which is accompanied by a rattle of about two dozen of these said tins, till one either buys one to quiet him or else uses what has now become parliamentary procedure and language. So arrangements were made for some work.

The outfit chosen was a square bellows whole-plate camera, six dark-slides, and a battery of lenses from 5 in. up to 21 in. focus,



two shutters, a view-finder, and sundry little odds and ends, besides six dozen plates. When the camera, etc., was packed in one case, the weight was so great that the idea of carrying it was abandoned, consequently a knapsack was obtained to take the camera and lenses and a small case for the dark-slides. The knapsack was made of brown waterproof canvas, and with only one side stiff, and two-inch broad shoulder straps; this simplified matters greatly, and a decent day's tramp was not out of the question.

The field chosen was one which, so far as I know, has been but little worked, and yet is not far from town, and which is immensely rich in interesting bits. It has been called the West Sussex Quadrilateral, and it is, as will be seen from the accompanying sketch map, situate in the south-west corner of Sussex, and lies between Littlehampton and Chichester, on the sea coast, and Pulborough and Midhurst inland. As nearly as possible my attentions were confined to places getatable from the railway stations, merely for the convenience and cheapness of getting about. Throughout the greater part of my wanderings I was accompanied by Mr. E. J. Marshall, the Head-master of the Brighton Grammar School, to whom I am indebted for numerous interesting notes.

For many years Mr. Marshall has taken a great interest in young men, and as President of the Union of the Brighton Young Men Societies, not only arranges Saturday and Bank Holiday cheap excursions to places of great historical interest or natural beauty, but even accompanies them. Further than that, he has for years also conducted his boys out on such excursions till they have become a very pleasant feature of the educational course, and it is to an old boy, Mr. Palmer, the editor of Hazell's "Annual," that I am indebted fo the introduction to Mr. Marshall. The map which I reproduce is extracted by kind permission from *Past and Present*, the school magazine. Mr. Marshall also supplies maps and plans, and any one who has been on the tramp with him will remember, as I shall always do, how extremely interesting and educational such tramps are. For the benefit of my readers Mr. Marshall has kindly added a few notes, which are interspersed in my jottings. Nor can I express sufficiently my appreciation of his kindly help and assistance, which even was carried so far as acting as light porter occasionally, but this usually when my knapsack was empty; when full it was on my back.

Our work was plotted out into days, and, following the precedent of our "Holiday Guide," I will try and give sufficient information to induce some of my readers to follow in our footsteps.

First Day.

Arundel, L. B. and S. C. R., 58 miles; cheap day excursions are run from London Bridge and Victoria, which are very convenient. I could find no dealer and no dark-room here. Perhaps some one knows of one. As is usual with many country places, the station is placed some little distance from the town, but there is a one-horse bus which plies between. Just before getting to the river Arun, from which the town takes its name, there is an old windmill, which would compose well with the castle in the background. The castle is the principal feature here, and it is open to the public on Mondays and Fridays, tickets for admission being obtainable at the Norfolk Hotel.

We met with no difficulty about taking in the camera, nor, so far as we could find out, was any objection made to our photographing there. The old gateway, with drawbridge and porteullis, is rather shut in by trees, and requires a very short-focus lens. Through the gateway and round to the left is the old circular keep, a really fine old structure, which can be taken from the top of the wooden steps leading up to it. This also requires a short-focus lens. In the interior of the keep several interesting bits may be noted—an old well, which is extremely pretty, being covered with luxuriant growth of ferns and other damp and shade loving plants. Here also is to be seen a very curious old cannon, of very small bore, some old stone balls, which were probably thrown from a species of catapult or balista; and for the ornithologist are some fine specimens of (preserved) owls. These birds, my cicerone told me, he could remember as being kept in the keep, and so they are now, but at present stuffed and in glass cases. The castle itself is a magnificent building, or will be, for its owner, the Duke of Norfolk, is pulling down the old castle and rebuilding it, and consequently it is utterly spoilt from a photographic point of view, as huge cranes and derricks are visible from every point, and it is difficult to avoid getting these projecting into the sky, and from an æsthetic point of view they are not pretty.

Leaving the castle and turning up the hill to the left, there will be found the church, this also being disfigured by workmen replacing the old oak ceiling, which was simply channelled and furrowed all over by the ravages of some little sacrilegious beetle. Through the town and back towards the station, turning to the left and keeping under the wall of the castle grounds, we come to Swanbourne Park, where pictures innumerable may be had. Possibly the better ones, showing the castle, may be obtained from the further side, which is best reached by going through the second lodge gate. One of my results, which was taken here, and in which a convenient tree hides the ugly poles and cranes on the castle, I reproduce. From almost every point round the lake some lovely effects are to be obtained. We were venturesome enough to climb to the top of High Horne Beacon, whence a magnificent view is to be obtained, which recalled those charming lines—

> "And turning saw
> The happy valleys, half in light, and half
> Far shadowing from the west, a land of peace;
> Gray halls alone among their massive groves;
> Trim hamlets; here and there a rustic tower,
> Half lost in belts of hops and breadths of wheat;
> The shimmering glimpses of a stream; the seas;
> A red sail, or a white."

Unfortunately, one feels at such a moment how utterly incompetent photography is to represent satisfactorily such a magnificent panorama, and reluctantly we retrace our steps, with one last glance at the fair scene, now enlivened by a herd of scudding deer below us, and we again come out on to the road.

Leaving the castle behind us and following the road, we reach "The Black Rabbit," which is only an inn, but is yet nestled down

in such a charming spot that many a picture can be made. Crossing the river here, and walking down through the fields, many a charming twist and turn will open up a new vista, all with the wooded heights and the grey old Keep in the distance, and poor indeed must be his artistic faculty who cannot here make a score of pictures. As for us, we had made our bag, "and home, well pleased, we went."

SHORT, SUGGESTIVE NOTES, BY MR. MARSHALL.

Sussex is our "English Home" county, and in this character West Sussex takes the lead. No portion of our island offers such records of the "home life" of Saxon, Roman, Dane, Norman, and of the Englishman pure and simple. Mr. Lower says that it is a comparatively rare thing to find any family, gentle or simple, migrating from Sussex to other parts of England. We do not invite the "rushing tourist," but those who are "lovers of the meadows and the woods and the hills"—of all the mighty world of eye and ear—both what they half create and what perceive, those who delight to find in the villages "a city of memories." The notes are frefrequently disjointed, always abrupt, and their full development would need far more space than can possibly be allotted.

On localities needing very detailed information, such as, for instance, Arundel itself, the notes are brevity itself, for it is assumed a local-guide book will be obtained. Kelly's Sussex Directory, which should be found in every good inn, may always be consulted with profit.



Swanbourne Lake.

ARUNDEL.

On leaving the train, walk on the Worthing road to the foot of Causeway Hill and take your first view of Arundel. The low-lying land between you and the town was once undrained and the high tides covered it with water. Hence the necessity for a connecting causeway.

Note the position of the castle. Is it not the very spot for an ancient British earthwork which the Roman would fortify, the Saxon modify, and the Norman amplify? Physical geography to the aid of the historian!

Near you is Calceto Cottage, with its record of Pyncham Priory (termed from the Causeway Calceto), founded by Queen Adeliza, the second wife of the first King Henry. The buttresses justify us in thinking that the Priory Church of St. Bartholomew, the patron saint of bridges and causeways, stood here.

Look South at the church, with its tower of the Norman transitional period, square, with its broad flat buttresses at the angles and rising but little above the roof. That is Lyminster, mentioned in the will of King Alfred the Great, who bequeathed the manor to his nephew. Here also once stood a Saxon nunnery, which was handed over to the Norman nuns. If you visit the church you will see on the N.E. of the nave, the record of an old doorway from this nunnery. Ask for Knucker Hole, the haunt of the foul monster whom tradition says once ravaged the country around.

Now for Arundel. You are entering one of the most ancient and grandly historical towns in the kingdom. Does it owe its name to its situation or, as some say, to Hirondelle, the horse of the giant Sir Bevis, who condescended to be the warder of the Earls of Arunde and for whose accommodation a special tower was built which now carries his name?

The Castle can only be seen on Mondays and Fridays after twelve o'clock. Do not be too curious as to dates and builders. Remember our lesson at Causeway Hill, and use your eyes when you visit the keep. Ask the custodian for information respecting St. Martyn's Chapel, the Well Tower, Bevis Tower, Queen Maude's bedroom.

The Church, rebuilt on new foundations in 1380, is now undergoing repair (see above). The Fitzalan Chapel at its eastern end is undoubtedly the church chancel, but Lord Chief Justice Coleridge in 1885 made the church chancelless by awarding the chapel to the Dukes of Norfolk.

Stroll through the town, turn to the left by the bridge, pass the ruins of the Maison-Dieu, founded about 1380 to maintain twenty poor aged men. Walk on to the Black Rabbit. If so inclined, inspect the Duke's dairy on the way. On the return, enter the Lodge Gate, skirt the beautiful Swanbourne Lake. The upper end of the lake reached, climb the hill on the right, enjoy the view, descend, another climb towards the west, and then a trudge on to White Ways Lodge, occasionally right about facing. On no account miss the peeps as you approach the lodge. Pass through, get the view of the Isle of Wight, and then turn to the left and walk to the entrance of the beautiful Down Valley, called Fair-mile Bottom, or re enter the Lodge gates. If you have time, drop down on the little parish of South Stoke, but do not fail to get on the river bank, out of South Wood Lodge, and walk to Houghton Bridge. Before crossing the bridge, walk for a few minutes up the Arundel road to obtain the best view of Amberley. Return to Arundel by rail to take the boat up the river the next day. Carefully enquire as to tides, or your work at the oar will give you no leisure to enjoy the scenery.

WALKS IN THE NEIGHBOURHOOD, IF TEMPTED TO PROLONG THE VISIT.

Walk to Barnlam, return to Arundel by train. This is a walk of about four and a half miles, four miles of which are through woods and fields. It passes through the Domesday parishes of Binstead, Walberton, and Barnlam, each with an old church possessing points of interest.

Binstead Church has some fine mural paintings Walberton has a name derived from *Woel-burg-tun*, indicating a military station. Roman remains found here have been placed in the museum at Chichester. Barnlam has a picturesque red-brick manor house of the time of the Stuarts, and a church with a Saxon nave and early Norman chancel.

To take this walk go to the junction of the Arundel and Ford roads, enter the gate, and take the left-hand path through the woods until you are close to Binstead House, then the path at the back of the house, and through the fields to Binstead. At Binstead ask the way through the fields to Walberton, and at Walberton the way through the fields over the railway to Barnlam. A second walk, with a visit to three churches; train to Ford.

Note the little characteristic church, with its dove-cot bell-tower, also the bed of the old canal, which connected Chichester Harbour with the Arun, which, by its connection with the Wey, made a water way to the Thames. Two very fine old manor houses to the right, one with a moat around it, most courteous residents in each.

Walk on to Clymping. The land on each side is the property of Christ's Hospital. An Early English Church, with a Norman tower, one of the most interesting in the county. An excellent description of the church hangs up in the vestry for the use of visitors.

On your return to Ford, walk on to Tortington. Here, before the reign of King John, a priory was founded by Lady Alicia Corbet. A portion of what may have been the refectory may be seen in a barn near the farm-house. Compare the church with that you have seen at Ford. A very restricted knowledge of the work of the Saxon, Norman, and Early English builders will render visits to these churches, and many others we shall notice, exceedingly interesting.

Carry in your pocket a copy of "Parker's Concise Glossary of Architecture," and you will double your pleasure.

(*To be continued.*)

CONVENTION PICTURES.—Some very successful snap-shots taken at Plymouth have been received from Mr. Hindley, who used his Facile camera.

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THE LAND OF THE FJORD, THE FOS, AND THE FJELD.

By Ringrose Atkins, M.A., M.D., Waterford.

A holiday trip in Norway is nowadays as commonplace an even as a run through North Wales, the Lake District, or the Scotch Highlands, and therefore a series of photographs of that much be-photographed country cannot claim the interest of originality or novelty. However, though this be so, a country so picturesque, and peopled by a race so courteous and hospitable, must be for long the happy hunting ground of the landscape photographer, who may revel amongst its long and winding fjords, its magnificent waterfalls, and precipitous mountains, hiding within their deep recesses, lovely lakes, and splendid glaciers, provided, indeed, Father Pluvius prove propitious, which is by no means always the case. I chose Norway as my holiday resort this past summer as much on the ground of health seeking as on photographic work intent, as my bent lies more in the direction of oriental or historic lands.

Bergen was the starting point of my travels through the country, which extended by land and sea as far as the North Cape. By chance I happened on fine weather in Bergen, where rain is generally the order of the day. Sunshine, however, attended my visit; too much so, indeed, for comfortable photographic work. Bergen possesses some interesting relics of the domination of the Hanseatic League, and the key of my Eastman roll-holder was kept busily going while I wandered along the quaint quays and amongst the fisher folk of this most fishy city. From Bergen I found my way by steamer, through the winding channels and beautiful reaches of the Hardanger Fjord, to the hamlet of Odde, lying at the head of Sörr Fjord, the southern terminal branch of the Hardanger, a narrow waterway walled in by lofty mountains patched with verdure behind which on the western side lie the vast ice-fields of the Folgefond Glacier. While at Odde I failed not to visit the majestic Skjaeggedalsfos, one of the highest waterfalls in Europe, whose gloomy grandeur is only equalled by the cataracts which descend amid the rocky canons of North-Western America. The Skjaeggedalsfos is only reached after a toilsome journey over mountain, valley, and lake. The Bauer Brae Glacier, the lowest branch of the Folgefond, together with the Laathefos and Espelandefos, are the other great attractions which make Odde a favourite haunt for tourists. In pouring rain, under a leaden sky, I travelled from this village by steamer along the Fjord to Eide, and thence by carriage to Vossvangen, a picturesque village on the shores of a reedy lake, provided with an hotel of well-nigh palatial proportions. From Voss, by rushing rivers, foaming cascades, and rocky defiles, I passed on to Stalheim, that lofty eerie which commands in uninterrupted view that masterpiece of Norwegian scenery the far-famed Nærodal. In the foreground are seen the windings of the skilfully constructed zigzag road which leads from the heights above into the depths of the valley below, and which can be traced through it, beside the banks of the rapidly flowing river hurrying onwards to mingle its waters with those of the Naero Fjord, into which the valley opens. On the left hand rises the conical summit of the Jordalsnut, the most prominent object in the landscape, and beyond it and on either side precipitous mountains rise to heights of five or six thousand feet. The valley, narrow and shut in though it is, is carpeted here and there with verdure and cultivation, and small "Gaards" or farms are passed at intervals. Driving down this valley in the well-known national vehicle, the light and easy going carriole, I reached Gudvangen, at the head of the Fjord, which is here a narrow sea gully walled in by mountains of surpassing grandeur. A characteristic Norwegian village is this, with its trim wooden houses. Through this narrow waterway and over the broader reaches of the Sogne Fjord, of which the Naero is one of the grandest arms, I found my way to Laerdalsören, a larger village clustered on a level stretch of alluvial ground at the base of the lofty hills which encircle the terminal branch of this great Fjord. After visiting and photographing Borgund Stave Kirke, one of the old and quaint wooden churches, dating from a very early period, two or three of which are still to be seen through the country, I again travelled down the Sogne Fjord, disembarking at Vadheim, on its northern shore, in order to pursue my journey towards the Sond and Nord Fjords. I drove direct by several stages to Naedre-Vasenden on the Jolster Vand, which lies almost midway between these two arms of the sea. Naedre-Vasenden, with its clean and comfortable hotel standing on the shore of the lovely lake, is a delightfully situated spot when the water is glassy smooth; and, mirrored in its blue depths, the purple mountains rising around it, and the fleecy clouds which sail in the azure firmament far overhead it make a grand scene. My route from here to Faleide on the Nord Fjord was through the magnificent Egge Valley and over the lofty mountain range which borders the Fjord on the south, by a road which leads without zigzag or turn straight up the mountain side, and from which glorious views, back over the valley and across to the ice-fields of the Justedals Glacier are obtained. The descent to Utvik on the Fjord side is almost as steep, though more winding, and at this village a boat was chartered which conveyed me across the waters to Faleide, on the northern banks. The Nord Fjord, though not so weirdly grand as the Sogne, is still very beautiful, winding in serpentine course between wooded hills, indented with picturesque baylets. At its head rise the snow-clad mountains enclosing the Kjendalsbrae the Kronensbrae and Brixdal Glaciers, the descending outlets of the mighty Justedals.

On the roof of a storehouse will often be observed a sapling growing. This is quite a common thing to see, the roofs being covered thick with sods, which form a capital soil from which alders and fir trees spring up and flourish. From Faleide I continued my journey northwards by Grados on the Horningdalsvant, and Indre Haugen to Hellesyet on the Sunelos Fjord, a village charmingly situated at the base of a defile in the mountains through which a foaming torrent pours itself into the waters of the Fjord. The view from Hellesyet, looking over the water towards the narrow entrance to the Geiranger Fjord, is very fine. The Geiranger is little inferior in weird wild beauty to the Naero Fjord, which it somewhat resembles. It is a veritable water canon winding between perpendicular cliffs five or six thousand feet in height, down which cascades and waterfalls innumerable pour, breaking into spray ere they reach the dark waters far below, and in grassy nooks, and on little shelving plateaux, high up on these towering cliffs, clustering farm-houses cling, making one feel almost dizzy at the thought of life in such a situation. At the head of this gloomy water-way lies Merok, nestling along its shores close to the water's edge, backed by rocky scarps and precipitous declivities. This hamlet is shown in a picture I took, the row of boat-houses characteristic of these Fjord side villages standing out picturesquely in the foreground, while on the right is seen the well-built, and splendidly situated hotel Geiranger. From Merok, a zigzag road—a triumph of engineering skill—has been carried right over the mountains, bridging here and there the long cascade which empties itself into the waters below. A long days' journey in weather most inclement brought me by the Sunelos and Sylte Fjords to Soliolt, and thence across country to Vestuaes, and again by water to Molde, the most important town in mid-Norway. Molde, apart from its own interest and the beauty and charm of its surroundings, is the threshold of the famous Romsdal, next to the Naerodal the finest of the Norwegian valleys. The Romsdalshorn is the crowning point of its beauty, and both from afar and close at hand, its solitary and well-nigh inaccessible peak—the Scandinavian Matterhorn—cuts boldly against the sky, and leaves an impression which cannot be forgotten. The river Rauma flows through the valley, here narrow and rapid coursing between borders and riven rocks, there widening out in broad and placid reaches. Further up this valley are three splendid waterfalls, the Mougifos, the Vermofos, and the Slettafos. The latter, while it does not possess the grandeur which height bestows, is yet very beautiful. The entire waters of the river gathered together into a narrow compass, leap in one bold bound from the higher to the lower level, and then rush on over the rocks below in a foaming torrent. The exigencies of space now compel me to skip from the Rothsdal, with its mountains and waterfall, to the "Land of the Midnight Sun." Hammerfest, the next in order, is said to be the most northern town in the world; it is beautifully situated on the island of Kralo, and looks out across its harbour on many rocky islets, and beyond a mountain range, touched with snow. The greater part of the town, which is entirely built of timber, was burned down some little time ago, and is now being restored in much more modern style. It reeks with the odour of cod-liver oil, and though situated in so high a northern latitude as 70° 49,′ its temperature even in winter is so mild that the waters of the Fjord never freeze, and the inhabitants are constantly enabled to carry on their sea-fishing in boats during the whole winter. At Hammerfest and along the coast as far south as Tromso numbers of Lapps are met with, either living in encampments of rudely-built huts or wandering about as their needs dictate. They are a small, poorly-formed race, but withal hardy and independent. They live chiefly on the produce of their herds of reindeer, and by hunting. To the summer tourists who visit them they sell furs and small articles for use or curiosity, which they carve from bone and horn, and thus eke out a livelihood. Their habits of life are simple in the extreme, and though dwelling quite by themselves they seem to harmonise perfectly with those around them of different racial descent.

A LOOK ROUND LYNN.

By "Viator"

Should any amateur be in Norfolk, and within easy distance of this ancient and interesting town, he should not fail to pay it a visit, taking his camera with him. Lynn will even repay, and well repay, one for the journey from Liverpool Street station, though it is just upon a hundred miles distant. It is a type of East Anglia, containing within its boundaries unnumbered and unsuspected spots and buildings of historic interest, and countless subjects for the photographer to get to work upon. Time was when Lynn was one of the first seaports in the kingdom, and in its streets there may still be seen the solid, substantial residences of the old merchant princes who made its name famous far and wide throughout the country in days of old. But things are altered now. Once Lynn Regis was the gate through which passed "packs of Manchester and Norwich wares and such like," and on the docks, near the quaint old custom-house, reminiscent of the Low Countries is still to be seen, the board containing the schedule of charges levied on all goods brought thither by the sea. Whoever hears now of "curtels of currants," or of "vats of mather, fustians, and battery"? Yet these and many another forgotten description of goods appear on the board, reminding one of the days when most merchandise was sea-borne, and no agitation about "railway rates" was ever dreamt of. Manchester and Norwich sent their "packs of wares" by sea then. Now they make use of the iron horse, and so Lynn has stood still, while they have forged rapidly ahead.

Hence it comes that in passing down one of the narrow, cobble-paved streets one may happen upon a great door, curiously carved and wrought in wood perhaps, leading into a court round which are built delightful ivy-covered houses that look like a miniature quadrangle at Oxford. And these, through the changed circumstances, are the dwellings of artisans—model artisans' dwellings indeed. Of these carved doors there are several fine examples, and on one of them may still be seen a portion of the old inscription relating that Magister Thomas Thorisby, an old Lynn worthy, who founded the King's Lynn Grammar School in 1520, was the builder. This was Thorisby's College for Priests. Lynn seems to have been a regular refuge for the religious orders of the middle ages. Indeed, it was generally known then as Lynn Episcopi, or Bishop's Lynn, and it was not till 1536, when at the Reformation the manorial rights were transferred from the See of Norwich to the Crown, that it became Lynn Regis. Here were settled communities of the Dominican, Franciscan, Carmelite, and Austin Friars, and many a relic of their presence remains. One may see a curiously-carved head looking down from the angle of a piece of stonework or an old building, that shows where the monks' habitations once were, while the different localities confess by their names how they were trodden of old by the feet of grey and black robed priests.

A more substantial reminder of these old days is St. Margaret's Church, which should furnish material for a good many exposures, both within and without it. It is sadly altered and shorn of its ancient glories, but the two remaining towers show what an imposing pile it once was. Originally it was a Benedictine priory, and some traces of the original Norman masonry of 800 years ago still remain, though the general character of the building is of mixed early English and perpendicular styles. St. Nicholas' Church, built in the early perpendicular style, has a splendid example of wood carving in the "Peter Door," and possesses a very fine south porch. Other interesting remains are the Red Mount, a name which has been corrupted from the proper designation, Rood Mount Chapel, and an hexagonal tower called Grey Friars' Tower. In one of the gardens of the old houses inhabited by the merchant princes is a curious look-out tower, presumably built that its owner might watch his ships coming up from the Wash, from which King John escaped only to fall a victim to his gluttony, if the ancient chronicles say true.

The Town Hall, close to St. Margaret's, should not go unnoticed. It was originally the hall of one of the Guilds of Lynn, and was built in the time of good Queen Bess. The walls of flint and stone work, curiously diapered, present a singular appearance in keeping with the mediæval aspect of the whole building. Fragments of the old city wall remain in places, and of the arches upon which it was built; and one of the old gates still stands—the south gate—which gives a good idea of the manner in which towns were protected before gunpowder was discovered. And here and there about the streets are fine old houses of strange design, with latticed windows and overhanging eaves, that make their more modern neighbours look miserably ugly and uninteresting. Why do not the architects of these days model their plans more upon the picturesque old past? From all this it may readily be inferred that the photographer who cares for quaint survivals of a bygone age, and records of the ways of our fathers may find plenty to work upon at Lynn. And if the field does not suffice him, there is unlimited scope for figure studies, and many a picture to be got out of the vessels that still make their way, in no inconsiderable numbers, to this old seaport. It is only three hours from London, and Sandringham lies close at hand, and all the scenery of North and West Norfolk is brought within his reach by the lines of the Great Eastern Railway.

DOWN AMONG THE DEVON FISHER FOLK.

By W. H. Whittard.

January is scarcely perhaps the month one would choose for a holiday, but I was compelled to go away at that time, therefore my inclinations naturally wandered to the warm and sunny coast of South Devon as being the most cheerful and enlivening place one could select at this usually dull and dreary season. Nor was I disappointed, for during the time of my stay at Torquay, the spot where I had pitched my tent, I was favoured with the most brilliant weather, quite warm enough to discard overcoats and sit basking in the sun.

Torquay, as everyone knows, is on G. W. R., 201 miles from Paddington, and is reached in a little over five hours.

As a place of photographic interest it is unsurpassed, for, added to the magnificent country, with its well-known picturesque lanes and villages, you have shipping and marine views, with wave studies in endless variety.

The days were too short to take long excursions, and there are not the facilities for getting about during the winter as in summer in the way of brakes, etc., but the careful worker can well do without, as he has scenery of the most varied description close to hand.

My first venture was a grand panoramic view of Torquay, which is to be obtained by passing the Imperial Hotel and following a blind alley for two or three minutes' walk; this brings you out on the cliff just above a beautiful natural arch, locally called London Bridge. Turning your back on this rock, you have the "Imperial" immediately on your right, with rocks sloping down to the water's edge, while tall palm-like firs give quite a Riviera look to the place. Then stretching out to the left you have Paignton, and in the centre the town of Torquay. You can get the whole view on two negatives, which, if carefully joined, make a very fine picture.

One can now regain the road, which should be followed for a short distance. This brings you to Daddy's Hole Plain, from which further good views can be obtained. The cliff path may then be resumed, following which you eventually come to Anstey's Cove, Babbacombe Bay, Oddicombe, and Watcombe, and enjoy, as far as my knowledge goes, one of the finest cliff walks on any part of the south coast.

Leaving the coast for a time, I made a pilgrimage to Berry Pomeroy Castle, distant about five miles by field path. It occupies an exceedingly fine position on the edge of a precipice, with a small mill-stream meandering at its foot. It is a very difficult ruin "to get at" from a photographer's point of view, as the castle is so obstructed by trees, even in the depth of winter.

This trip, if you take Cockington on the way, which is an ideal village in its rustic simplicity and beauty, is quite sufficient for one day's outing. Another day the walk should be continued to Totnes, four miles further, charmingly situated on the banks of the Dart. It has many old picturesque buildings and the remains of a castle. A little steam launch runs between here and Dartmouth, leaving Totnes at every high tide, fare 1s. The river winds and doubles so much that it gives quite the appearance of a series of lakes. From a hill above Sharpham, ten distinct and apparently quite isolated sheets of water can be seen. There are so many places on the journey to Dartmouth which the artist will feel compelled to take—Sharpham in its sylvan beauty, Stoke Gabriel with its quaint cottages, and the Dittisham fishermen each in turn claiming attention—that a rowing boat perhaps will give him greater facilities for stopping where fancy dictates than are possible with a steamer.

Dartmouth reached, my space being limited, I must leave any intending traveller to search out its beauties for himself, an easy task, for here may be found abundant food on which the contemplative mind may revel at will.

Brixham is the next point claiming attention, and is celebrated in history as the landing-place of William Prince of Orange, an event commemorated by a stone placed at the end of the pier. It is a fishing town of some importance and intense quaintness, with its steep and winding staircases leading from one street to another and teeming with fisher folk. I only had one day there, and was, as I then thought, very unfortunate in the weather—a drizzling rain with a thick sea fog, but this lifted a little.

With time, money, and fine weather I can conceive no place where a holiday would be more enjoyably spent or productive of more lovely subjects for the photographer's art than among the haunts of the Devon fisher-folk.

Societies' Notes.

It has been proposed that a Photographic Club, on more sociable lines than those already existing in Leeds, should be formed, its chief object being the advancement of the photographic science amongst amateurs, and particularly in assisting beginners in elementary points. It is suggested that meetings and lectures should be held monthly during the winter months, whilst during the summer short excursions to places of interest may be arranged, the results to be exhibited for criticism at the following monthly meeting. It is proposed to hold a general meeting for the election of officers and rules, as early as possible; all desirous of becoming members are requested to communicate with any of the following:—C. B. Hutchinson, Hon. Sec. *pro tem.*, Highfield House, Lady Pit Lane, Beeston Hill, or Central Market, Leeds; C. C. Vevers, 12, Market Street, Leeds; T. W. Barran, 36, Ebberston Terrace, Leeds; A. Tate, South View Terrace, Menston. A meeting will be held shortly, and already twenty names have been received.

The Southport Social Photographic Club will hold their third annual exhibition, from October 23rd to 28th inclusive, at the Studio, 15, Cambridge Arcade. The following are the classes open to all photographers residing in Southport and Birkdale:—Lantern transparencies, set of twelve, any subject—two prizes and a certificate; Landscape, set of four, any size—two prizes and a certificate; Instantaneous, 5 by 4 and under, set of six—two prizes and a certificate; Competition for ladies only. Set of four pictures, any size or subject—two prizes and a certificate. In the whole of these classes any printing process may be employed. Full particulars may be obtained from J. R. Cave, Hon. Sec., 52 Neville Street, Southport.

Societies' Meetings.

Hackney.—On 8th inst., Mr. R. Beckett in the chair. Report was read of the August 5th excursion to Radlett. Members' work shown, from Messrs. Guest, Hensler, Pollard, and Selfe. Question, "What is best method of reduction of a negative over-intensified with bichloride of mercury and ammonia?" Reply—After ammonia or soda sulphite, refix the plate with hypo, and it will come out little denser than it was before intensification. After cyanide of silver reduce with ferricyanide of potash and hypo, hypo alone makes little difference. Mr. Hensler succeeded in removing veil from lantern slides with Farmer's reducer. Mr. Beckett said if a single unexposed plate is left for any considerable time in its box, on exposing and developing, often the paper mark becomes clearly visible. Mr. Blake showed negatives of a lilium auratum on Edwards' iso plates, one with a light yellow screen, the other without; although two and a half times the exposure was given to the former, yet it had green fog. Three or four and a half times was recommended. Mr. Penny showed a negative veiled over and asked whether it were chemical or light fog? It was restrained with two or three drops of 10 per cent. sol. br. pot. Reply—¼ gr. to 4 oz. is the correct quantity. Too much soda sulphite was probably used. It is safer to start development with half quantity and increase as necessary. Question—"Can Alpha paper be developed with Amidol and be toned afterwards?" Reply—Yes.

Leicester.—The third excursion took place on the 12th inst., under the guidance of Mr. J. Porritt (President), the rendezvous being the far-famed Castle of Belvoir, the seat of his Grace the Duke of Rutland. The members and friends mustered in good numbers, including several ladies, whose presence added greatly to the enjoyment of the party. The castle, built of freestone, chiefly in the Gothic style, is a magnificent building standing on the wolds above the Vale of Belvoir, and occupies the site of an old fortress, said to have been built soon after the Norman Conquest. On arriving, we learned much to our regret that Mr. N. Sherbourne, architect to his Grace (who had promised to conduct to some of the choicest scenes in the private gardens), would be unable to do so through illness, and consequent absence from home. After inspecting the exterior, the ladies and some of their friends, paid a visit to the noble apartments, the picture gallery, containing an extensive collection of works by some of the most celebrated masters, and the Gobelins tapestry, while others rambled about the beautiful grounds and shady glades, taking views which it is hoped will prove happy reminders of a pleasant time and beautiful day. The light was about perfect for photography, but, unfortunately, the district is not a photographer's paradise. After partaking of a substantial tea at the "Peacock Hotel," the party returned to Leicester, having spent a most enjoyable afternoon and evening.

South London.—On 9th inst. ordinary meeting, the President, Mr. F. W. Edwards, in the chair. The Secretary announced the postponement of the President's lecture, "Reminiscences of a few Eminent Men," which was to take place on September 4th, and stated that a demonstration of the new developers, amidol, metol and glycin would be substituted on that occasion. The names of two new members were proposed. Mr. Maurice Howell (one of the Vice-Presidents of the Society) then gave a short lecture on "The Chemical Action of Intensification." He stated that intensification was resorted to when the negative was not what it should be through errors of exposure, insufficient development, or several other causes. They no doubt all knew how to mercurially bleach the negative, but he proposed to enumerate several ways of turning the white preparation into a black one and giving density to the picture. Ammonium sulphite was almost always used in the old days to intensify collodion pictures, but this process had the bad effect of darkening also the half tones and entirely blocking up the shadows. A solution of ammonia or sulphite of soda might be used, but the best of all was ferrous-oxalate, because it reduced both the silver and the mercury to a metallic state, and it possessed the best keeping qualities. Ferrous-oxalate restored the image, and it had another advantage, as the negative might be bleached and intensified over and over again so as to increase the opacity of the negative, and without apparently injuring it in any way. The mercury chloride could be used again and again until a very heavy deposit was obtained. He also referred to potassio-silver cyanide, ferridcyanide of uranium, and bromide of copper, the latter appearing to act as an admirable intensifier for lantern slides, but it did not act so well for negatives. They had their choice of all these processes, but he himself was in favour of ferrous-oxalate, as he was of opinion that the deposit left on the surface was less likely to decompose when printing, especially when using albumenised paper. He used the ordinary formula for ferrous-oxalate, taking one part each of Nos. 1 and 2 and adding one part water.

SOCIETIES' FIXTURES.

Aug. 17—Aston Nat. His. Soc.—"Special. Entomology."
" 17—Newcastle-on-Tyne.—Outdoor Meeting, Alnwick.
" 19—Bristol (Camera Society).—Excursion to Stapleton.
" 19—Photographic Club.—Excursion to Ongar.
" 19—West London.—Excursion to Uxbridge.
" 19—Manchester.—Ramble to Bollin Valley.
" 19—Lewisham.—Outing to Hever, Chiddingstone, and Penshurst.
" 19—Paisley.—Excursion to Bridge of Weir.
" 19—Northern Photo. and Scientific Assoc.—Excursion to St. Albans.
" 19—Gosport.—Excursion to Carisbrooke.
" 19—Bolton.—Excursion to Ashbourne for Dovedale.
" 19—Leytonstone (Camera Club).—Ramble along the Roding.
" 19—Lincoln (Camera Club).—Visit to the Cathedral and Cloisters.
" 19—Birmingham Photographic Society.—Half day Excursion to Kinter.
" 21—S. London.—Demonstration: "Lantern Slides, and how to make them." Mr. H. E. Farmer.
" 21—Richmond (Camera Club).—Informal Meeting.
" 22—Rochdale.—Excursion to Chester.
" 22—Birmingham.—The President, Sir J. B. Stone, J.P., has kindly promised to distribute the medals, prizes, and certificates awarded at the Exhibition in May.
" 22—East London.—Demonstration upon Chloride Printing and Toning, by Mr. Copping.
" 22—P.S.G.B.—Technical Meeting. "Aluminium Flashlight." A Demonstration by Mr. Boles.
" 23—Leytonstone (Camera Club).—Special General Meeting to receive and pass new set of Rules and elect Assistant Secretary and Curator, in the place of Mr. Montagu Atkinson, resigned.
" 23—Lincoln.—Excursion to Blankney Hall.
" 23—N. Middlesex.—"Development modified to Improve Flat Subjects." Mr. J. McIntosh.
" 23—Croydon.—Whole-day Excursion to Forest Row.
" 23—Photographic Club.—Printing on Rough Paper.
" 24—Northamptonshire.—Excursion to Higham Ferrers and to Irchester.
" 24—Aston.—Mutual Criticism of Members' Work.
" 26—Huddersfield.—"A Naturalist's Ramble in Cornwall," illustrated with Lantern Slides, by H. G. Brierley.
" 26—W. Kent.—Excursion to Westerham.
" 26—Bristol (Camera Society).—Excursion to Portishead.
" 26—S. London.—Excursion to Leatherhead.
" 26—Oldham.—Excursion to Oldham Wakes.
" 26—Leytonstone.—Excursion to Buckhurst Hill.
" 26—Northern Photographic and Scientific Assoc.—Excursion to Hatfield.
" 26—Fairfield (Camera Club).—Excursion to Speke.

Messrs. Morgan and Kidd's Employes.—For many years the employes of Messrs Morgan and Kidd have enjoyed an annual holiday together, and last Saturday their extensive premises in Kew Foot-road were closed for this year's outing. The members of the party assembled at Teddington Lock, and embarking on the *Windsor Castle*, the largest steam launch on the river, they had a pleasant run up to Hampton. They were received at Hampton by Mr. and Mrs. Kidd at their charming house, Castlemaine, where dinner was served in a large marquee erected in the grounds. The tables were beautifully decorated with flowers and palms furnished from the gardens and conservatories of the house, and were filled with an extensive and varied array of appetising dishes. About 100 sat down to a very enjoyable and well-served dinner. The usual toasts followed, and Mr. Kidd, replying to the toast of "Success to the firm," said that the present year was a very notable one in the history of Messrs. Morgan and Kidd. For some years past he had been solely responsible for the direction of the firm, but at the beginning of this year Mr. Ernest Morgan and Mr. H. M. Dennes had been admitted as partners. He hoped that the success of the firm would be fully maintained, and that with new blood it would receive a still further impetus.—Mr. Dennes gave a hearty welcome to and proposed "The health of the visitors," and Mr. Ernest Morgan "The health of Mr. and Mrs. Kidd," a toast always very popular. Year after year the company find themselves deeply indebted to Mrs. Kidd for the active and invaluable share she invariably takes in the organisation of the outing, and her spirited speech in reply to her part of the toast was received with great enthusiasm. After dinner a photograph was taken of the whole party, and the launch was again boarded, and continued its run up the river until Penton Hook was reached. Tea was served on the return journey, and the run back was enlivened by the diversified musical talent of the members of the party. Most of the songs were rendered in considerably better style than the average of amateur ability, and were very heartily received. Teddington was reached about 9.30 p.m. and a thoroughly enjoyable holiday brought to a close.

To Correspondents.

All communications for these columns are to be addressed to **The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.**

RULES.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES.

6140. **Hard Negative.**—Will some reader kindly tell me how to develop Ilford P.O.P. with Amidol? What depth to print to, and any other information?—Ycrep.

6141. **Alnmouth and neighbourhood.**—Would any reader kindly inform me through this column about the places of photographic interest in and about Alnmouth?—WARP.

QUERIES UNANSWERED.

June	2.—Nos. 6102.
,,	9.—Nos. 6106, 6108.
,,	16.—Nos. 6109, 6110, 6111, 6112, 6113.
,,	23.—Nos. 6115, 6116.
,,	30.—Nos. 6118, 6119, 6120, 6121, 6123.
July	7.—No. 6128.
,,	21.—Nos. 6131, 6133, 6134, 6135.
,,	28.—No. 6138.
Aug.	4.—Nos. 6142, 6146, 6147, 6148.
,,	11.—Nos. 6150, 6152.

ANSWERS.

6149. **Ferrotype.**—I would advise "A. McC." to get Hardwick's "Photographic Chemistry," or Jabez Hughes's "Manual of the Wet Process."—D. H. W. PREEDY.

6151. **Exposure.**—I think 40 to 60 seconds would be about right for "E. P. M.'s" requirements.—D. H. W. PREEDY.

6151. **Exposure.**—E. P. M. does not say whether the engraving is to be copied equal size, which of course is an important factor in the exposure. Suppose it is, and that we are using Ilford ordinary plates and working in a well-lighted room, then the exposure would be 28 or 30 seconds; but the data are so vague that it is impossible to give a definite answer.—W. PITCAIRN CRAIG.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

GILSLAND.—(1) We should place in following order; 3, 7, 1, 10. (2) No. (3) Films most decidedly, they are quite as easy to develop. (4) Euryscope. (5) A stereoscopic camera is provided with two lenses and a central division so that two pictures of the same object can be taken on one plate, and prints from the negatives can be examined in a stereoscope, which will give the idea of relief or solidity to the objects. (6) Over-exposure is probably the fault of your landscape work, but we should like to see a negative or two before saying definitely. (7) The special rapid plates you name are the ones we should choose.

PERPLEXED.—Letter and plates received. We will try, and then report.

E. W. F. E.—(1) The camera was not held straight when exposing, and we should say over-developed. (2) Shows signs of movement, has too much foreground, and under-printed. (3) Very fair. (4) Good. You certainly are more successful with plates than films, and if 4 was not printed quite so deep it would be better most decidedly. The tinge in the whites may be due to toning in too strong a light or else too weak negatives. We shall be pleased to see some more work from you.

E. G.—(1) The *f* numbers of stops are always found by dividing the focus by aperture so that your stops are No. 1, *f*/22; 2, *f*/14⅝; 3, *f*/11; 4, *f*/8¼; 5, *f*/7⅛; and for practical work you can disregard fractions and reckon them as 22, 15, 11, 9, and 7. (2) The use of impure water; if you used distilled water you would not find so much trouble. Double the quantity of sulphite of soda, that is, use 4 oz. instead of 2 oz. (3) For under-exposure use a very weak developer, and give it plenty of time to act; for over-exposure add plenty of bromide to the developer and use less of the soda solution. We hope to publish the articles on wet process next week or week after.

G. A. C.—Thanks for your note. Hope you will get something better in the future.

G. LINDSAY JOHNSON.—Many thanks for your letter, but regret we cannot utilise.

AN AMATEUR.—(1) You might try an acid and alum bath, but unless we know what particular stains they are we cannot give you any help. Can you not describe more fully or send one up for us to see? (2) Keep your printing frame in constant and violent motion whilst exposing, or else use a smaller aperture and put the vignetter at least 3 in. from the negative. If you keep your printing frame stationary move your vignetter backwards and forwards between light and negative.

J. F. ROBERTSON.—The lantern you name is a very good one, but we should advise a three-wick lamp, and we are afraid that to get a disc big and bright enough to show to 200 people limelight would be essential. The lantern could be fitted with limelight.

VENO.—We are afraid that the articles will not be started till first issue in October.

W. SPENCER.—We prefer No. 3 with single slides.

E. W. H.—Never mind the name of the camera; it seems to have frightened you. Just treat the films as a medium rapid plate and give them the exposure you would in your ordinary work, using the shutter for moving objects when you like.

J. E. HUTCHINS.—Either your fixing bath is acid or else the prints are not completely fixed or they have come into contact with metal. See that your toning and fixing baths are alkaline, and give a double fixing in two baths as suggested last week in Grundy and Haddon's paper.

R. H. MICHIE.—Your letter has been accidentally overlooked. Both the films you send are slightly under-exposed and considerably under-developed. Any neutral-tinted medium will do for stopping out holes, etc., e.g., Winsor and Newton's, Reeves's, or any one's.

F. FIELDING.—The manufacture of the cold-bath paper is a trade secret.

J. A. A.—(1) You might try chloride of gold 3 gr., bicarbonate of soda 90 gr., water 10 oz.; wash well before toning. (2) Yes, the solution will keep for a fortnight without trouble. (3) The more bicarbonate the less it keeping power. (4) We recommend—

Water	2 oz.
Hypo	200 gr.
Ammonium sulpho cyanide	25 ,,
Nitrate of lead	10 ,,
Chloride of gold...	½ ,,

(5) Yes, the prints get a little colder while washing and drying. (6) It is advisable not to use the sulpho bath too long, but it can be used instead of water for the next bath. (7) We should say that ½ sec. was plenty of exposure under conditions named and with such rapid plates.

AN AMATEUR.—We do not see the advantage of publishing your letter, which is only another example, that it is not the tools, but the man who uses them who makes the pictures.

H. S. C.—Fallowfield, 146, Charing Cross Road, W.C., can supply. He is sole agent. See answer to to J. A. A. for combined bath.

A. J. A.—Wash your prints in salt and water before toning; this will probably get rid of the blue spots, and do not let your prints get dry, but mount them whilst damp and see that the mounts are curved with the prints outside while drying. This will prevent the cracks.

A. E. HARRIS-MASON.—(1) The tones of prints are good, though we prefer a rather warmer tone. (2) They certainly may be considered fair examples of work on that paper. (3) Practically no. the tones you have are as near almost as can be. (4) Keep the fixing-bath alkaline, and add a little gold to it.

PUZZLED.—You would probably have to expose for about three months before you got any image with an oil light of any kind. A very powerful electric arc lamp is the only thing to use.

H. J. CLAGUE.—You would have to obtain a Zeiss Anastigmatic Series I. or II. to answer your requirements. Articles on Twin Lens Hand-Camera appeared in the *A. P.* for Dec. 23 and 30, 1892, and Jan. 6 and 13, 1893.

E. P. M.—Let us know what prints you want, and you shall see them on condition you pay carriage both ways.

N. E. E.—We do not know which "Iris" shutter you mean; send a sketch or diagram of it and then perhaps we can help you.

F. PARTRIDGE.—Re-bleach the image and re-fix. You can try the old ferric chloride method. Soak your negative in water till soft, then in solution of ferric chloride 1 : 20, rinse well and re-fix.

E. BUCK.—J. Moore, 18, Vauxhall Street, Birmingham.

H. MORRIS.—Under-exposure and faulty development. You used too strong a developer, and consequently the negative shows a mark where it did not cover the plate evenly. The remedy is to intensify the negative.

H. P.—You must have a rectilinear, and we should advise you to wait till you can afford to pay a little more and get a good one. 12s. is rather a low price for an R.R. Periscopic lenses are not corrected for the chemical rays, so you could not use it except as a fixed-focus lens without making a correction each time.

HAZEL.—You should have cut off some of the foreground and included more above the spire, tilted your camera, used a swing-back and stopped down more so as to have got the top of spire sharp. Your dark skies are probably due to over-exposure. Your negative would stand intensifying, and would then give you a more brilliant print. What developer are you using?

CHAMBERLAIN.—(1) *F*/10 and *f*/8, etc., mean that the aperture of the diaphragm or stop is one-tenth or one-eighth of the focus of the lens. (2) The coloured screen is placed in front or behind the lens when using isochromatic plates, so as to cut down the blues and violets which might act too strongly, and would thus be represented falsely in the print.

GEO. L. SNOWBALL.—We do not see that you have much to complain of, as both the pictures could certainly be classed as landscapes.

CHAS. MOSS.—Get a copy of Lyonel Clark's "Platinum Toning," which treats very fully of the preparation of the paper. Our publishers will send on post free, 1s.

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 464. Vol. XVIII.] FRIDAY, AUGUST 25, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Monday afternoon "At Home" is discontinued for the present, but will be resumed on Monday, the 4th of September.

Our Views.—An Appeal—What Becomes of all the Prints—Special Work—Educational Value of Photos—Haphazard Photography—Future Competitions—A Vacuum Frame—E. London Photo. Soc.—Crystal Palace—Photography at the World's Fair—Another Appeal.

Flotsam and Jetsam, by Anchorite.

Letters.—Lost, Stolen, or Strayed (Gould)—The World's Congress (Ward).

Articles.—Pictorial Photography (Wall)—Equivalent Focus of Telephoto System (Nelson)—Amateur Photography (Barnes-Ward)—Orthochromatic Photography (Carbutt)—Photographers' Efforts at Union (Ward)—Winter Photography in the Alps (Main)—Stereoscopy (Chadwick).

Holiday Resorts.—The West Sussex Quadrilateral—Notes for Camera Workers on N. Wales.

Apparatus.—Adams and Co., View Meter—Twin-Lens Ideal—Fallowfield's P.O.P. Mountant—Watkins' Exposure Meter—Hill-Norris's Collodion Plate.

Reviews—Die Blitzlicht Photographie.

Societies' Meetings.—Chichester—Fairfield—Hackney—N. Middlesex—Tunbridge Wells.

Societies' Notes.

Societies' Fixtures.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 52, Hand-Camera Work.—Latest day, September 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, October 6th, 1893.)

We regret that in consequence of our absence from town several applications for entry forms were, by accidental omission on the part of a clerk, delayed in transmission.

All the unsuccessful prints of the Photography at Home Competition will, we hope, be returned early next week. We have been obliged to retain them to enable a short criticism to be prepared.

We have received an appeal from the master of a large provincial school for prints wherewith to adorn the walls of the schoolroom, as the school is not in a position to provide its own. We have gladly acceded to this request, and we shall also be glad to send on any prints which may be forwarded to us for that purpose.

Our readers are continually turning out hundreds and thousands of prints, and one naturally wonders what becomes of them, or what ultimate good they do. There is no doubt that a photograph may be made extremely interesting and instructive from an educational point of view, provided, of course, that the producer, or those into whose hands it falls, is capable of making it so.

As an instance we need hardly point out that one of our competitions is "Architecture, exterior and interior." Too often the sole idea of a photographer in taking a church, interior or exterior, is the possibilities of making a picture of it, but there is yet another side which we may point out as one which has been much neglected, and that is the making of negatives of churches, both interior and exterior, to show their architectural features, and to illustrate different styles of architecture.

We may point out that in many counties there are distinctive features of church architecture which are well worth recording. The not always careful restorer is always at work, and many old and interesting churches are being fast restored and improved out of recognition.

If, instead of haphazard photography, a special subject be taken up, and this carefully followed out, our hobby may be made far more interesting, not only to ourselves, but to others. For instance, we will assume that we are going for a holiday with the camera, and on the tramp come across a village church. Too often this would be passed by unless extremely picturesquely situated, whereas a photograph of the exterior and interior, accompanied by notes as to the architec-

ture, makes it far more interesting. To do this successfully, it is necessary, of course, to have some knowledge of architecture, but this may be so easily picked up that no one can say that is impossible.

WE propose next year to foster this specialisation in photographic work as much as possible, and we shall hope to institute some competitions, one of which will be devoted to architecture, in which special prizes will be given for examples of the various styles of architecture. Before then we hope to have a few articles pointing out the salient features of each style.

IN ordinary landscape work notes may be made of the flora, for with a little observation it is possible to detect that particular plants are more common in certain districts than others, and that certain plants will only grow on certain soils. Working in this way we may make our hobby not only more instructive to ourselves, but also more instructive and interesting to others, and try and disprove the old saying that the man with a hobby is the most selfish of all men.

MR. W. S. SIMPSON, C.E., has patented a special frame which ought to be useful to photographers. This special device consists of a frame which can be exhausted of the air, so that the water-colour drawing or photograph is enclosed in a vacuum. A vacuum in the ordinary sense of the word is not a very difficult thing to attain, but by no means so easy to keep, the air having a great liking for finding its way in somehow. Mr. Simpson, however, has arranged a sort of aneroid indicator, which at once shows when any air has found its way in.

A LETTER in our correspondence columns from the Hon. Secretary of the East London Photographic Society throws a curious sidelight on the late Crystal Palace Show. It will be interesting to hear what the authorities have to say on the point.

THE almost unbearable restrictions imposed by the authorities at the World's Fair have induced serious complaints to be made against the official photographer, and these have been so far relaxed that the *Scientific American* has been fortunate enough to obtain a permit for photographing in the grounds and buildings.

WE have received an appeal for lantern-slides for St. John's Newfoundland. Our correspondents states: "We hope to get up a series of lectures of a recreative and instructive nature in one of the public halls. Since the great fire a year ago when all or nearly all the lantern slides in the town were destroyed, there has been a great dearth of rational means of recreation for the people." We shall do our best in the matter and appeal to our readers for help also.

THERE has been a big outcry in England against medal-giving, but at the International Exhibition to be held by the Photo Club of Paris in December, each exhibitor will receive a medal engraved with his name. We have already referred to this exhibition.



PHOTOGRAPHY AT HOME COMPETITION.—"A Study from the Nude." *J. Hall-Edwards.*
GOLD MEDAL.

Flotsam and Jetsam.

ARE there many people, we wonder, who know and read the *Modern Review?* And, if so, have they read an article that appeared in a recent number, written by Dr. Francis B. Hutchinson, of New Zealand, and entitled, "The Perfect Man and Woman." We happened to take up this number the other day, and found in it quite a new adaptation of photography, as nothing less than a factor in the development of a race of perfect men and women.

AT Harvard University, in the land of the almighty dollar, there is a gymnasium where physical training is carried to the very pitch of perfection. Each "freshman" is stripped, weighed, measured, and photographed. Then his gymnastic course is mapped out for him, and his progress is duly reported. Acting on this plan, Dr. Hutchinson has compiled a physical register of his own, at Wellington, in far-away New Zealand.

AND at last, in spite of opposition arising from ignorance and prejudice, it has come to this, that it is "recognised that the

highest compliment I can pay any man is to invite him to stand before my camera." Here, it seems to us, is a most interesting department of work in which photography can accomplish great things, both for art and for the physical improvement of mankind.

The photographs are used, too, not merely as records of progress on the part of the gymnasts, but as standards of manly form whereby people can learn to appreciate the beauty of the human figure. This is no mean advantage in an age in which the excessive development of intellectualism is bringing quite close to us the danger of forgetting that man is after all an animal, and can only be perfect when he is a fine animal.

Dr. Hutchinson goes all the way, it may be added. He urges that every museum should contain its "Libro d'Oro, a splendid book set in a conspicuous lectern, containing the nude photographs of the finest men carefully selected," and that the same plan should be followed, so far as possible, at home. Why not?

In the last number of the *Cosmopolitan*, an American illustrated magazine which we cannot help again praising, there is an article on "Engineering with a Camera in the Canons of the Colorado," which opens thus:—"In the canons of the Colorado, prior to January, 1890, photography had been used in almost every way in which it was possible to be of any advantage to science or art, from recording the movements of a military campaign to catching the face of the sun or moon, and down to the snap-shot at an affectionate parting over the garden-gate, to be used later on in a breach of promise case."

That is a sufficiently promising opening, one would think. But more remains behind. The article tells how a surveying party started through the Colorado canons, and at the outset lost their photographer through a bad fall of his which broke his leg. There was not another professional within a thousand miles! Yet your true Yankee is full of grit. The engineer of the party, who had never touched a camera before, set to work, began photographing, and in less than three months made 1,200 exposures, all of which, he avows, turned out all right.

And thus a complete panoramic view of the river-banks, and walls of the canons, from the head of the Colorado to the gulf of California, a distance of about 1,200 miles, was obtained. Small wonder that the writer declares the camera worthy of enthronement, beside the transit and the level, as an emblem of engineering.

"A snap-shot fiend" has been making the editor of *Pearson's Weekly* his father confessor, and he has some amusing experiences to relate, though no dreadfully wicked ones. His most tragic adventure was in Rome, where he was detected in the very act of photographically shooting a beautiful damsel. The damsel's brother immediately went for him, and, to make assurance doubly sure, smashed the camera and all the plates!

One of his most comic photographs was that of a broken-down German Count on his knees proposing to an American heiress at Monte Carlo. The lady was not shy—not much. She took a hundred and fifty prints for distribution among her girl friends in New York. The "fiend" seems to have got about a good bit, for he has shots of Bismarck doing up a shoe lace, and of the Czar playing "gee-gee" with a toy horse. No wonder he manages "to make enough out of it to pay his expenses abroad every year."

Anchorite.

Letters to the Editor.

LOST, STOLEN, OR STRAYED.

Sir,—When the National Photographic Exhibition was held at the Crystal Palace in the early part of this year the managers invited the loan of pictures from societies. Our society, the East London, sent a case containing twelve framed pictures for exhibition only and *not* for competition. These pictures have not returned yet.

The managers have been applied to in vain. As one of them says: "The whole affair is unfortunate and unaccountable. I am afraid I cannot help you further in the matter.—Yours faithfully, S. G. B. W."

It certainly is *unaccountable*, as the name and address of the society occupied a prominent place upon the front of the pictures.

I trust this will be a warning to other societies, who I hope will in future hesitate before trusting their pictures to irresponsible persons for fear that, like ours, they may be classed as "Lost, Stolen, or Strayed."—Yours faithfully, W. R. Gould

(Hon. Sec., E. London Phot. Soc.)

* * * *

THE WORLD'S CONGRESS.

Sir,—The following report of the first business at the Thursday session of the World's Congress has not been reported in the general press, but I think it might be of interest to your readers.—Yours faithfully, H. Snowden Ward.

On Thursday, August 3rd, before the programme was commenced, Mr. H. Snowden Ward pointed out that a suggestion contained in Judge Bradwell's opening address had been overlooked by the Congress, and he proposed that it should be acted upon. The suggestion was that Mr. W. Jerome Harrison's paper on "The Desirability of an International Bureau, established (1) to Record; (2) to Exchange Photographic Negatives and Prints," should be read in advance of its proposed order, and that a committee should be appointed to carry out its suggestions. Mr. W. A. Cooper seconded the proposition, which was carried. Mr. Harrison's paper recommended an international bureau connected with national bureaus for the collection, preservation, and exchange of photographs of historical, scientific, or literary interest. The meeting voted that the President should nominate a committee to undertake what might be possible in furtherance of the scheme, and Judge Bradwell therefore nominated:—

Chairman, H. Snowden Ward, London.
Vice-Chairman, Gayton A. Douglass, Chicago.
W. Jerome Harrison, Birmingham.
John Carbutt, Philadelphia.
Shapoor N. Bhedwar, Bombay.
Leon Vidal, Paris.
W. K. Burton, Tokio.
Mrs. Elizabeth Flint Wade, Buffalo.
Dr. John Nicol, Tioga Centre.

Pictorial Photography: its Principles and Practice.

By A. H. Wall.

CHAPTER II.—THE PURPOSES OF COMPOSITION.

The word composition, pictorially applied, embraces almost everything that belongs to artistic design. It is a word of wide application with many elements, and has its foundations on principles as soundly scientific as those which belong to the construction of a building, a piece of music, a play, or a poem. It is, however, a word which is frequently wrongly understood. It does not imply, as some too hasty reasoners often conclude it does, the separating and recombining of fragments not naturally associated. This was one of the earliest mistakes made by some of those photographers who first attempted to adapt it to their art. And hence we had all kinds of incongruities, a confusion of conflicting facts and ideas, a frittering away of good effects, and a medley of selected things that harmonised neither with themselves nor with any one dominant artistic purpose.

Then again, there are others who imagine it to be a word of technical meaning and mechanical application, a very simple

affair indeed. With them to put a large jug between two little ones, as some cottage dame would intuitively arrange them on her chimney shelf, is to compose. With others composition is a scattering of numerous accessories around some central object, merely because they are in themselves pretty, and, it may be, interesting. They, too, mistake the thing's meaning. They, too, only distract the observer's attention and confuse his sight. They do not compose, they decompose a picture. How often, looking at some combinations of trees, rivers, and mountains, or some figures accidentally grouped, the painter or sculptor will exclaim, "How gloriously they compose!" This is because he understands what composition is, not, one need hardly say, because he created the mountains or grouped the figures. It is not, again, as some suppose, purely fanciful, the result of neither reasoning nor observation, for it comes only from both. Neither dexterous manipulation, nor skilful focussing, nor careful development will secure composition in the works of one ignorant of artistic principles, although each will aid composition when it exists. The shifting of a camera stand a few yards to the right or left, backward or forward; the raising of it or depressing it; the presence of a few apparently most unimportant accessories introduced by sheer accident—all these things may make or mar the composition according as you do or do not recognise their influences. It all rests with yourself. The eye sees no more than it brings with it the power to see. That little cat at court who recognised neither the signs of power, grandeur, nor dignity, and had a remarkably quick eye for

"The little mouse under the chair,"

was as blind to splendour as a photographer inartistically trained is to the finest specimen of composition in landscape or figures. He too sees only the little mouse he wants to catch. The painter might as logically expect to do without composition by inventing some medium of rare value for his pigments, or some particularly good colours, as the photographer may by chemical and optical studies unaided by artistic study.

"Practice," said Sir Joshua Reynolds, "is justly called *purblind*, for practice that is tolerable in its way is not *totally* blind, an imperceptible theory which grows out of, and accompanies, and directs it, is never wanting to a sedulous practice; but this goes a little way with the painter himself, *and is utterly inexplicable to others.* To become a great proficient, an artist ought to see clearly enough to enable him to point out to others the *principles* on which he works, otherwise he will be conventional, and what is worse, he will be uncertain." Composition is no mere adventitious thing adopted to bestow factitious graces and artificial charms, it is a part and parcel of imitative art, essential to successful and truthful representation. The phenomena of nature defies re-creation: we can at the best but feebly imitate, and to aid our efforts every power available is an absolute necessity. He who has such powers in the greatest abundance is the greatest artist.

The works of many eminent of the older masters in art are rather illustrations of what we should avoid in composition that what we should apply; they are so fantastical and eccentric. A green landscape was, for instance, an abomination in the eyes of certain landscape painters in the last century. With them it was always autumn, and a picture without a brown tree in it was an example of very bad composition. Now some of the most delightfully brilliant and cheerful compositions on the walls of our picture exhibitions are composed in the richest variety of fresh, spring-like and sunny greens.

The leading principle in composition is *unity*—unity of intention or purpose, unity of sentiment or feeling. Every outline, whether real or indicated by the boundary of vision, every point of light or dark, all the intermediate tones, and every object the picture embraces, may concentrate the power and purpose of the artist into a focus, or weaken and destroy it. All these things are expressive, each says something to the mind of the spectator, and it is your business to make them all say what you want them to say. Alto, bass, tenor, and soprano must be harmonised to blend in the composition of the musician, and with due reference to the dominant key, or the result is discord. Here, let us say, is a scene of wild savage grandeur. Put your camera up before it when it is at its wildest and grandest, when the sky is stormy and the general effect is gloomy, when everything that weakens its dominant sentiment is shut out by choice of view-point, time of day, or atmospheric effect. If you introduce figures let them too partake of the dominant sentiment. That is composition. Sharp, quick, angular lines giving a rugged expression would be better in such a composition than gracefully swelling hill-tops and gentle hollows, because grace and gentleness are not the ideas you wish to convey. If such things are associated with them in the view before your camera, so alter its position that they do not appear on your focussing screen. Then you will be composing, strengthening, and uniting for the realisation of a dominant idea, to which everything in the picture should be subordinated. A different scale of tones, a different arrangement of lines, lights, shades, masses, points, etc., for a different scene, but for this nothing that does not belong to it, nothing that will not compose with it. Study the association of ideas, see how one is introduced by another, and ask yourself as you examine the scene you are about to photograph, what ideas, while looking at it, you derived from it, and why this one or that was more prominent than another. This is a very good way of studying pictorial composition too, a good, sound, thoroughly practical way.

I have noted duly our Editor's hints as to diagrams and illustrative drawings. These will be very useful indeed, and having his permission—as I presume I have—I shall not hesitate to introduce them.

The Equivalent Focus of a Telephotographic System.

MR. E. M. NELSON, writing to the *English Mechanic* anent Mr. Dallmeyer's recent article, says:—

I have read Mr. Dallmeyer's article on "Telephotographic Systems" on page 510 with great interest. Of course, the practical photographer when using a telephotographic lens primarily wishes to know the focus of the simple equi-convex lens to which the combination he is working with is equivalent. Now, if he is acquainted with the necessary data required by Mr. Dallmeyer's formulæ, the equivalent focus can easily be found by inserting the corresponding numerical values.

But even should the photographer be able to measure with sufficient accuracy the foci of the positive and negative combinations, there will still be the difficulty with regard to the distance between the "nodal points" (strictly, the distance between the posterior principal point of the positive and the anterior principal point of the negative combination). This distance, as Mr. Dallmeyer points out, must be known accurately. For example, in the telephotographic lens I am using, an error of $\frac{1}{10}$ in. will make a difference amounting to about one-half the equivalent focus of the system.

Now these principal points cannot be accurately determined except either by means of an expensive focometer or by a complete knowledge of the curvatures and refractive indices of the lenses of which the various cemented combinations are composed. It may be assumed, therefore, that these data are inaccessible to the ordinary practical photographer. By the following simple rules, however, anyone can find the equivalent focus sufficiently accurately for all practical purposes:—

1. Set up a distant object whose length in inches is known.
2. Focus this on the ground glass of the camera.
3. Measure accurately its size on the ground glass.
4. Divide the length in inches of the distant object by the size of its image on the ground glass, and call this quotient M.
5. Measure the distance in inches between the object and the front lens of the telephotographic system, and call this D.
6. Then the equivalent focus, F, of the telephotographic lens may be at once determined by the formula I have given in my appen-

dices and tables in "Carpenter on the Microscope," seventh edition, page 1054, viz.:—

$$F = \frac{D}{M + 1}$$

Example:—At a distance of 1,272 in. an object 42 in. long gives an image on the ground glass of $2\frac{3}{20}$ in.

$$M = \frac{42}{2\frac{3}{20}} = 19{\cdot}535.$$

And— $$F = \frac{1{,}272}{19{\cdot}535 + 1} = 61{\cdot}9\text{in.}$$

If, however, the foci of the positive and negative combinations and the back focus B are accurately known, then F, the equivalent focus of the telephotographic system, may be computed without any further measure, because d, the distance between the posterior principal point of the positive combination and the anterior principal point of the negative element, may be found thus—

$$d = f - \frac{B f'}{f' - B}.$$

Therefore, by putting this value in the following equation, we find the equivalent focus—

$$F = \frac{f f'}{f + f' - d}.$$

Example $B = 17{\cdot}5$, $f = 7{\cdot}2$, and $f' = -2{\cdot}3$.

$$d = 7{\cdot}2 - \frac{-40{\cdot}25}{-19{\cdot}8} = 7{\cdot}2 - 2\,033 = 5{\cdot}167.$$

And— $$F = \frac{-16{\cdot}56}{7{\cdot}3 - 2{\cdot}3 - 5{\cdot}167} = \frac{-16{\cdot}56}{-{\cdot}267} = 62{\cdot}0\text{in.}$$

But when the back focus B and the focus of the negative combination f' are known, F may be more readily determined by the formula given by Mr. Dallmeyer at the top of the first column on page 511.

As, however, all these formulæ require the knowledge of the focal length of the negative combination—a quantity not easy for the ordinary practical photographer to measure—the first formula given above will probably prove more serviceable. When the equivalent focus F is known, the rapidity of the system can be found by dividing the equivalent focus F by the clear aperture, a, of the front lens. Example:—

$$\frac{F}{a} \text{ or } \frac{62}{1{\cdot}8} = 34{\cdot}45.$$

The lens, therefore, is working at, say, f/35.

Amateur Photography.*

By Catharine Weed Barnes-Ward.

The countless economic forces of the world, already great, are constantly receiving fresh accessions, while many of the old ones are becoming so blended as to seem new. From small beginnings, apparently unimportant discoveries in the arts and sciences, have been evolved what have proved powerful factors in the world's progress. Among the forces which can interest, educate, and elevate humankind, helping to train the brain, the eye, and the hand to uses heretofore unknown, let me place amateur photography. It has passed the stages of infancy and childhood, and is rapidly attaining the strength of maturity, possessing a depth of reserved energy for future growth which cannot be estimated. We are all familiar with the professional side of the art-science, but the amateur one is not so well known and the funny column in the daily press would be shorn of much which passes for humour if jokes on the "camera fiend" were to be stricken out. There is, however, a growing tendency to give the amateur proper consideration, and in this paper I wish the term professional to be understood as applying to those photographers who make the profession a means of livelihood, and amateur to those who reap no pecuniary benefit from the work. In many amateur camera societies the line, as excluding professionals, is very closely drawn—far more so than I think wise or necessary, while, on the other hand, though the liberal-minded men in the profession are ready to extend the right hand of fellowship to earnest amateur workers a large number of professionals seem afraid that their business will be seriously injured by what can only prove in a money point of view, an exceedingly limited competition. Very few amateurs accept pay for their work, and the professional who betrays jealousy of the former only reveals his own incapacity.

The two paths should converge and not diverge, the professional and amateur interests are not necessarily antagonistic, and if the amateur looks down on the professional because of the latter's accepting money for his work he shows himself unworthy the name he claims. An amateur is, so the word implies, a lover of the pursuit he follows, but can he be justly so entitled when he makes a plaything of the work to which many a professional devotes his life faithfully and seriously?

Amateurs are inclined to be a trifle illiberal in their conception of the work as a profession, though at the Photographic Convention of the United Kingdom in Edinburgh last year, which consisted of professionals, they apparently agreed to differ very much as if they had held separate sessions. We amateurs should always be ready to give a reason for the faith that is in us, realising that our branch of photography, but lately in leading-strings, can now lend a helping hand to its eldest sister the professional branch. The art science is a dual entity bound by a tie as close as the Siamese twins, and those who pursue it, whether they belong to one or the other branch of the service, all march under the same banner.

The hobby, fad, or whatever one may term it, has already won a far higher position than is generally understood to be the case through the aid it is giving in affecting the growth of human enlightenment. Its value is being recognised in literature, medical research, astronomy, and a long series of mental labours, and as professionals are usually, besides giving the bulk of their time to portraiture *per se*, also too pressed by the exigencies of daily routine work to deal much with experiment and research, credit for the most valuable discoveries can fairly be claimed by amateurs. Such labour can best be done by men who, not bound by the necessity of earning a livelihood, are struggling to wrest from nature the secrets which govern her onward impelling forces, and, balancing one agency against another, can fully measure and weigh in their mental scales the value of each and every one to the world.

Can we name in the same breath with these amateurs those who look upon photography merely as a means to kill time, and who, by no accident even, apply the slightest modicum of mental effort to understand the reasons of success or failure.

The list of the strictly scientific workers is a long and brilliant one, but it is being supplemented by a number of amateurs who, not having scientific training, are forced to advance slowly. These last are, however, utter unbelievers in luck, and their knowledge is won by patient, thoughtful application of cause to effect. Such knowledge is not merely theoretical. It is theory wedded to practice, translated into the world's language. The word amateur is like a certain robe which is said to cover a multitude of sins, and the veriest tyro of photography can in one sense rank with the most advanced worker, not at all to the advantage of the art-science as regards its position in the eyes of the world. There is so much poor work done, technically and artistically, by amateurs that the general judgment as to the work of all is greatly affected, and photography, which can be made to mean so much, is often forced into a lower place than is its just due. The Chicago Exposition has lent valuable aid in changing this status, and if those who follow the work for the work's sake will, taking advantage of this fact, demand for it from others unprejudiced judgment and the same respect they themselves gave it, the cause of general education will have made a great gain.

Artists—or I prefer the term painters—are greatly indebted in many cases to photography for valuable assistance, and many men of such eminence as Alma Tadema, are broad-minded enough to acknowledge the fact. But there is an intimate blending of art and science in the work, and not all its followers are liberal enough to recognise the relative value of each.

The photographic camp is every once in a while, therefore, turned into a modern tilt-yard, wherein artists and scientists fight each with long names, labouring to prove what is unprovable, which is the higher, art or science. It is the old story of the two knights fighting to prove whether the shield was of gold or silver to find at last that it had two sides, of which each knight had only seen one. If the advancement of photography as a means of education and culture is desired, why not agree that while the scientific side can exist in a measure without the artistic, the latter is of no value by itself, as its work must be done by scientific means, while the best results are attained by a judicious admixture of both? To many workers, however keen may be their artistic sense, the conquering of some obstinate point in chemistry or optics is fully as great a pleasure, and evolving a new one makes them supremely blest. There is a deep sense of triumphing over apparently insurmountable difficulties which to an eager searcher for knowledge gives an abiding satisfaction. The great value of such discoveries in photo-

* Read at the World's Congress on Photography, August 2nd, 1893.

graphy lies, however, in their subsequent application as a means of enhancing the artistic beauty of a picture. In view of the vast growth of discovery during the latter part of this present century, we are in danger of forgetting that the ideal, as well as the real, imagination as well as fact, needs development in a well-rounded, thoroughly-balanced mind.

Artists, as well as scientists, are to blame for this misunderstanding, for, however great may be the mental altitude of the latter, there is no scorn greater than that with which one who claims to have artistic gifts can look down upon those who in his eyes are less endowed. Flood might well lament the "rarity of Christian charity under the sun," the lack of it is apparent in almost every field of human effort.

Amateurs are partly to blame for the idea which many people hold, that amateur photography is a mere amusement, a sort of jack-in-the-box performance. A camera, very often a cheap one with a single view lens is bought, and the owner starts out immediately to take portraits, make studies of animals, or with almost sublime assurance to photograph a dimly-lighted interior with no attention whatever to the disposition of furniture, colour of the walls, light, etc. These first attempts, naturally enough, proving failures, people say that photography, unless one is a professional, is of no real value, and thus the art itself suffers loss of credit. If by any chance the aforesaid beginner scores a success, his camera is immediately looked upon as a sort of reservoir from which pictures *ad libitum* can be drawn without money and without price. Very few, except the initiated, know the actual cost of a finished photograph, and I am constantly hearing the complaint that the amateur is underselling the professional. My own way of dealing with this question is to do all but the printing myself, and then let my sitters, or those for whom the view is taken, order the prints from some professional. This is, of course, when a number are desired, though, personally, it is much more preferable to do all the work myself, even if very few of the recipients understand the labour involved, or that individuality is possible in printing as in taking a picture. Not one person in ten knows that for all the various printing methods used by amateurs but one negative is required, or that its technical quality has anything to do with its usefulness.

The complaint once reached my ears that if a professional, whom I knew, would take as much pains with a certain amateur's printing as with the complainant's the latter might be more successful at exhibitions. Such amateurs believe that what they are pleased to call genius atones for what they undervalue as mere technical excellence, but which is simply, in this case, being too lazy or ignorant to do well the scientific part of the work. There are paintings and statues which really offend the eyesight, but for some inscrutable reason a poor photograph is ranked far lower in the scale of demerit. No one lens can be as capable of variety, no matter who uses it, as one brush in the hands of a skilful painter. But supposing the amateur can only afford one lens, ought the work itself to lose in credit on that account? The more careful his selection of lenses, the better and more varied will be his results.

As painters, therefore, adopt marine, landscapes, or figures as a special line of work let the amateur photographer do the same, and select carefully the lens which will best suit it. Only a very few amateurs understand wherein consists the difference between lenses or their extremely delicate mechanism, failing utterly to comprehend the strength which always resides in accurate knowledge of the powers with which we labour.

The lens and the brush are both products of human workmanship, and their true value lies in the brain which guides them.

The question of colour is, we are told, to be eventually in the power of the photographer as well as the painter, but, setting that aside, the trained artist in either branch can always have the delight of form, as regards beauty and strength, which is a far subtler, keener pleasure than the enjoyment of colour. Those only who love their work can begin to realise its possibilities. We smile indulgently in this prosaic century at the idea of Fra Angelico painting on bended knees his conception of heaven and the saints. We cannot reconcile reverence with analysis, preferring not to witness the play from in front, but to go behind the scenes and see the wires pulled. In so doing we are apt to forget that the great discoveries of science should not make us consider the human brain as merely a useful tool, but, in its wonderful ability, to design and invent as being closely allied to the great Creator of the world.

Let the amateur understand the instrument he uses from one end to the other, and be able, if necessary, to improve its capabilities, let him study the genesis and development of both wet and dry plates, and all the wonderful agencies which result in the finished print, constantly varying as they are, and then dare to look upon photography as a toy. Aside from its scientific, artistic, mechanical, or any other side its great and abiding value lies in a combination of them all and its application to any and all of the arts and sciences as a means of the truest culture. There is a grand, noble power in the amateur's hands if he looks on his work as a means of education, and it could be most effectively utilised by keen-witted educators as a means of teaching young people. If the rising generation could be persuaded to use their eyes as a means of absorbing into their mental consciousness a keener sense of the beautiful world in which they live instead of seeing life in a far less worthy sense, camera work will have won a right to high honour. It should have a place in every college course, notwithstanding the clamour which such a proceeding might cause.

Some one must suffer by every progressive step in the world's education, but, after all, it is the greatest good of the greatest number which should be considered.

Only where attention is especially turned to the subject can it be realised what a place in our literature the camera is making for itself. Besides the various magazines devoted to its interests, many others and the daily press are according to it increasing notice. Travel, biography, and a host of other subjects are effectively illustrated by its aid both on paper and by means of lantern slides giving pleasure and instruction to thousands. The question of societies in this connection is an important one, but I will allude to it briefly. It is a part of my editorial work to print notices of society meetings, and hardly a week passes without some new organisation being formed. When these are used to advance the general growth of the art and not for personal credit, they can wield a very positive influence, and there is a place for them in the world.

As in other societies, the hardest work falls on a small number of members, but they have the true repayment of that deep satisfaction which only comes to those who work not for general praise, but genuine self-improvement.

Amateur photography has the great advantage that its followers are confined to no age, sex, or condition of servitude.

The question of sex especially is rapidly becoming a past issue. It never should have been raised at all, and those who persist in clinging to it will at no late day find themselves far in the rear of the great army of civilization.

There are altogether too few women who can not only do the work but tell how they do it in clear comprehensible speech, many because they have never tried to do so; and let me urge upon them the thorough study of photography from start to finish as a far more satisfying occupation than most of what are called feminine accomplishments. As a mental and moral tonic and a strong aid to general, broad culture it is invaluable to those who have learnt its power. There is no effort wasted and everything the amateur does to advance his progress in the pursuit is generously returned to him.

In closing let me state what is perhaps the greatest value of amateur photography; its universality, its international character. It is a society whose members are of every nation, and such meetings as this present one go far to bind workers together. Let each compare his work and methods with others, avoid their faults but learn from their success, conceding to others the same devoted interest he gives to the work.

Amateur photography has a promising future and ever widening horizon, and the deeper one explores its mysteries the stronger grows its hold upon him. It will be only a toy to those who look upon it as a toy, but of broad, high and deeply absorbing value to those who appreciate it.

Believe in your work, honour it with faithful service, ever ready to see your faults and to correct them, remembering always the words of Longfellow, at once a reproof and an inspiration: "We judge ourselves by what we feel capable of doing, while others judge us by what we have already done.

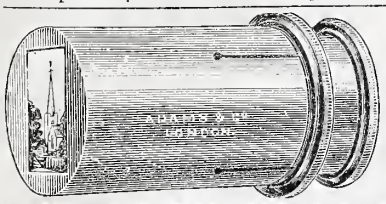
Orthochromatic Photography, and its Practical Application.

By John Carbutt.

It is very evident that the prominence given to orthochromatic photography at this World's Congress of Photographers reflects the growing interest in the use of colour-sensitive plates, not only to produce monochromatic results from nature and the production of the artist, but a close realisation of that long-sought desideratum—photographs in the colours of nature.

Since the first intimation by Col. Waterhouse for the use as a dye of eosin in collodion, to overcome the inability of the collodion process to render other than the blue and violet rays of the spectrum, scientists have worked assiduously to overcome the difficulties that were inherent in the old wet and the dry plate process of the present; and to no one are we so much indebted for the present success in orthochromatic photography than to Dr. Herman Vogel, of Berlin. We owe also much to the research of Mallman and Scolik, of Vienna, Bothamley, of England, and others we might

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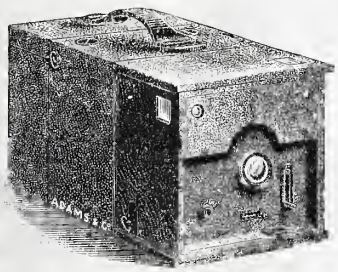


Fig. 3. *Showing Camera open for use as an ordinary Hand Camera.*

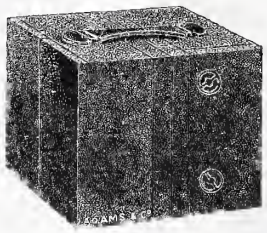


Fig. 2. *Showing Camera Closed.*

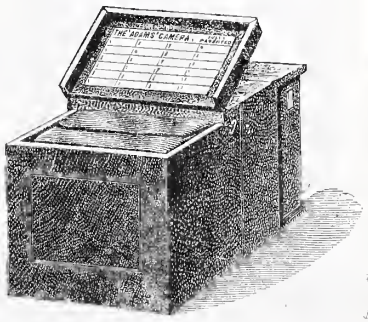


Fig. 4. *Shows top of Camera open, with changing-box.*



Fig. 1. *Showing Camera used on a Tripod, with object being focussed upon the focussing screen, also showing rising front and swing back in use.*

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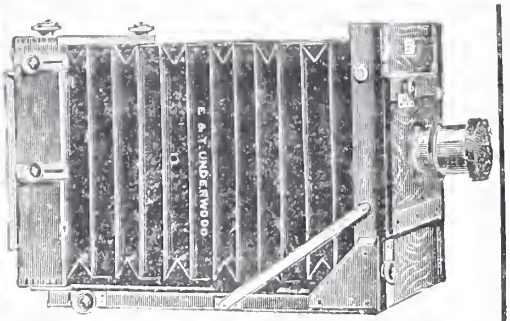
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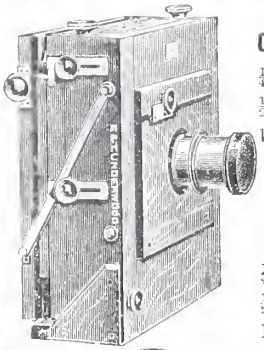
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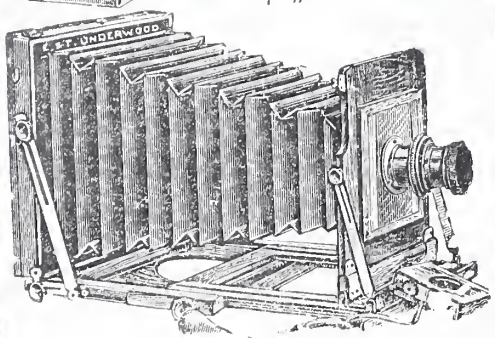
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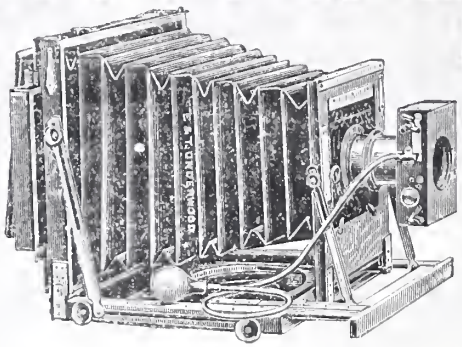
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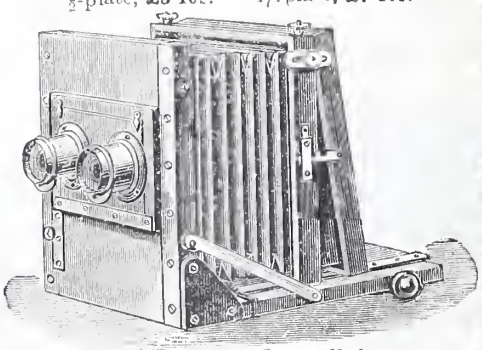
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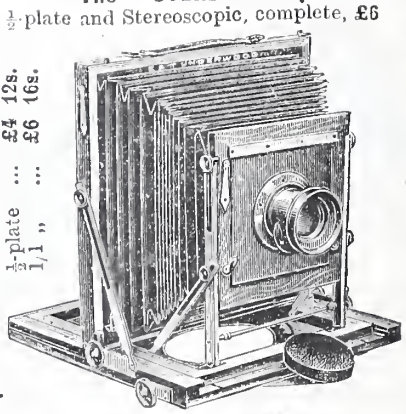


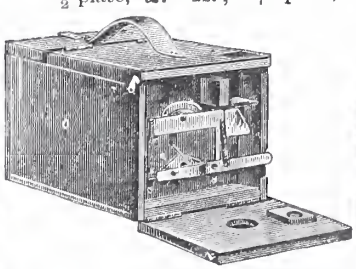
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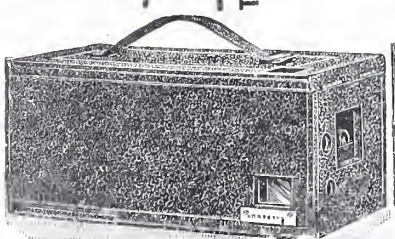
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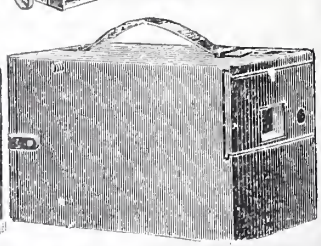




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ment'on, who by their liberal contributions to the literature of orthochromatic photography have done much to aid those who have made it their business to produce commercially the plates for the photographer's use.

The dyes now generally used, either by mixture with the emulsion before coating the glass plate or celluloid film, or dying the ordinary gelatine plate afterwards, are eosine, erythrosine, rose Bengal, and cyanine, the latter, we believe, but rarely used, owing to the unsalable character of the plates made with it. To the above may be added azaline, a compound of Dr. Vogel's invention, said to consist of chinoline red and cyanine blue.

Orthochromatic photography has had its greatest advocates in Germany and Austria in the reproduction of works of art in monochrome. Since the introduction by myself in 1885 of orthochromatic plates the use both by the amateur and professional photographer has had a steady growth. The intelligent amateur, as seems to be always the case on the introduction of any improvement in photography, was the first to test its merits, then the professional copyist of art works took hold of them, and their results now vie with the best products of Europe. The professional photographers of America were the last to take hold of and use the orthochromatic method, and the wonder to me is that they are not more used by them. One reason I believe is a want of acquaintance with the orthochromatic plate, and with many the idea prevails that a colour screen must be used under all circumstances. This arises, it seems to me, from an unwillingness on the part of photographers to read the literature provided for them on the subject, which, if read, would make many things plain that they remain in ignorance of, and, as is often the case, lose business for the want of the little knowledge so easily acquired.

It is, however, very pleasing for me as a manufacturer of orthochromatic plates, to say that since 1891 the increased use of these plates has been very large as compared from the time of their introduction in America up to that date.

The colour-sensitive plate may be used under all conditions when a plain bromide plate has previously been employed. Its use is to harmonise contrasts, whether in the dress of the sitter or a view from nature. Greens and yellows are rendered with more detail and colour value, while blues and light-reds in drapery are given their proper colour value instead of being rendered lighter in the photograph, as is common on the ordinary gelatine plates.

The Colour Screen: When and How to Use It.—For ordinary landscape work a very light yellow screen is all that is necessary; a dark yellow, or one of orange shade would falsify distance. The most suitable place for the colour screen is at the back of the lens board, sliding it in two-grooved cleats, and should be placed in position when focussing. A screen of such a tint as this one would require an increased exposure of four to six times, depending on the state of the atmosphere; the yellower the light the shorter the exposure, and towards evening may be dispensed with; the value of a light-yellow screen is best shown where the vista is slightly hazy, or where the clouds are included in the view. Their outlines and forms will be much better rendered in the negative.

Use of Screens in Copying Paintings.—In this class of work the selection of the proper colour screen is of more importance than in landscape work, and the photographer should be provided with two or three, ranging in tint from a moderately strong yellow, medium and dark orange. Paintings are best photographed in direct sunlight, and by examining the painting through the colour screen it will not be difficult which one of the screens to select. For instance, take a modern French painting, consisting of light and brilliant colours; a yellow screen will answer, but with a German or English painting containing strong reds and dark blues and green we would select an orange colour screen, and correspondingly increase the time of exposure. It may astonish some of you to learn that as much as ten minutes' exposure is given in direct sunlight on paintings that are old or painted in strong colours.

Photography in the Colours of Nature.—The objective point that has been striven after for years seems now near of being accomplished. I do not mean the actual photographing of either objects of nature in colours, but through and by the agency of the orthochromatic plates. By the patient and scientific research of Dr. H. Vogel, of Berlin, and Frederick E. Ives, of Philadelphia, the first has achieved by triplicate negative and a like number of superimposed impressions, reproductions of objects in colour so true to the originals in colour as to be quite a commercial success, and in this country is being carried out by Mr. Kurtz, of New York. Of Mr. Ives's work I have seen a great deal, it differs in result from that of Dr. Vogel's in that the final picture is a triple image, a positive, on glass viewed through three-colour screen in an instrument invented by him, called the heliochromoscope, and the object as viewed is seen in all of nature's brilliant colouring.

Colour Photography, so Called.—Is now achieved by making three negatives of the object on orthochromatic plates through three different colour screens, viz., violet, green, and red. I have here samples of such colour screens. In printing by the collotype, or half-tone block, as in Mr. Kurtz's work, inks in the three primary colours are used, viz., blue, red, and yellow. The proper selection of tints, however, is a very important matter. Reproductions by this method are shown in Mr. Kurtz's exhibit in the gallery, north end of Liberal Arts Building.

Developing of Orthochromatic Plates.—The same developer as used for the plain plate may be used for the colour-sensitive plate, except that we find it best to use it slightly diluted, as the colour-sensitive plate more readily takes on density, and the exposure should always be generous; it is necessary in order to get full colour values.

Keeping Orthoeromatic Plates.—A certain amount of doubt as to the keeping qualities of orthochromatic plates has been disseminated in this country. I can only say with regard to those of my own make, that I have evidence of many cases where they have yielded perfect results from nine months to a year and more after leaving the factory. Plain plates orthochromatised by the bathing process, writers tell us, are not to be depended on over a few weeks. From past experience I am led to believe that plates from a proper orthochromatic emulsion have as good keeping qualities as the plain plates from same emulsion.

In conclusion, I may say that I am firm in the belief that colour-sensitive plates will in time replace the plain bromide plates, as the latter has the old wet collodion.

Photographers' Efforts at Union.*

By H. Snowden Ward

(Editor of the *Practical Photographer.*)

When first I was asked to read a paper before this Congress, I purposed to use the title "Union Among Photographers." A friend objected that if I took that title, and treated the subject truthfully, the paper would be as brief and to the same effect as a certain famous essay, "On Snakes in Ireland," which consisted of the three simple words, "There are none!" While this statement is too sweeping to be absolutely true, it contains the germs of truth; so, in deference to my friend's suggestion, I speak of photographers' efforts at union.

The subject is such a vast one that I cannot pretend to treat it exhaustively. I shall not trouble you with the reading of the whole, even of the particulars that I have been able to collect and that are contained in the printed slips distributed about the hall. The subject is one that will be taken up, that must be taken up, by abler and more leisured writers than myself, and the present is merely a first contribution. It is also a bait thrown out to catch information, and I shall be indebted to anyone who will send me additional particulars, or correction of errors that occur in the present brief summary. Such particulars I will endeavour to have published in an English and an American photographic annual.

In order to keep the subject within limits that are at all manageable, I have confined myself almost entirely to professional efforts, and, with one exception, to organisations in the English-speaking world. The matter may well be divided under four heads:

(1) Brief historical notes.
(2) Efforts now existing.
(3) The ideal union.
(4) Present possibilities.

The history of the subject is largely a history of failures. But from those very failures we can learn much that will be valuable if we of the present are true to our opportunities. In the history of the subject, both of success and failure, America plays a far more prominent part than the other sections of the English-speaking world, so I give her the first position. The earliest records are those of—

The Daguerrean Societies, national, State and local, which flourished in the '40's and '50's. They were professional bodies, discussed manipulation, prices, etc., and for a time flourished. Gradually jealousy and dissension appeared among them, and before the daguerreotype was killed, the societies formed in its interests had killed themselves.

I have obtained particulars of some forty-five unions or professional societies of which no trace appears now to exist, and place their names and brief particulars on record. They are arranged in the order of the earliest dates at which trace of them is found, although some of them were, no doubt, old before the time at which I have met with particulars. They embrace Canadian societies as well as those of the United States. Most of them are defunct, possibly some may feebly exist, and probably many have been merged into amateur societies.

The Photographic Club of New York City, existing in 1845, before professionals and amateurs were separated; date of dissolution

* A paper read at the World's Congress on Photography.

not known. Photographic Section of the American Institute, 1859; the oldest now-existing society; is now purely amateur, though originally largely professional. San Francisco Photographic Artists' Association, founded 1866, to remedy price cutting, and flourished for a few years. Michigan State Photographic Association, founded in Detroit, 1866. German Photographic Society of New York City, founded 1867, a branch of the Photographic Society of Berlin; last heard from in 1889. The Ferrotypers' Association of Philadelphia, 1868, was a strong and active though small society; fell to pieces after 1879. Northern Ohio Photographic Association, active in 1879, when it attempted, and with fair success, to enforce Sunday closing of studios. Photographic Association of West Virginia, founded at Wheeling, West Va., 1869; no subsequent history. Toronto Photographic Association, founded 1869 (or early '70); fell to pieces at once through price-cutting by members. Boston Photographic Society, founded 1869; languished till early seventies and was then re-organised on a broader basis as the New England Photographic Association, which held several well-attended meetings, with much discussion, but little practical result. The Indianapolis Photographic Society, founded 1870; in 1872 became the Indiana State Association and flourished for a while. St. Louis Photographic Association, founded 1870. Pennsylvania Photographic Association, founded 1870, as a State association; had about one hundred members, embracing all the best men, and for a while did good work. Central Ohio Photographic Association, 1870; had no fees or meetings, but had a well-arranged scheme of mutual help by correspondence and the regular exchange of specimens of work. Brooklyn Photographic Artists' Association, 1872; met regularly at various studios, for a time. Photographic Association of Western Illinois, 1872; had quarterly meetings. Photographers' Association of District of Columbia, founded Washington, 1872. Maryland Photographers' Association, Baltimore, Md., 1872. Buffalo Photographic Association, founded 1873. Northern Michigan Photographic Association, founded 1874, and held meetings to draw up a constitution, but did little else. Photographic Artists' Society of the Pacific, San Francisco, 1875; had some fifty members, but died ere long. Chicago Photographic Association and Photographic and Fine Art Institute of Chicago; were active in 1881; founded some years before; no record since 1889. Chicago College of Photography, first session announced 1881; apparently a good scheme, in theory at any rate, for a college for training professional assistants; no record since 1881; Gayton A. Douglass, treasurer. Photographic Society of Nashville, Tenn., founded 1881. Photographic Stock Dealers' Association of America, founded at Cleveland, O., 1882. Rochester (N.Y.) Photographic Association, founded 1883. Detroit (Mich.) Photographic Association, active in 1883; no later record. Northern Michigan Photographic Association, in existence in 1883. Photographers' Association of Syracuse (N.Y.), founded 1881. Photographic Association of Fort Wayne (Ind.), founded 1885. Photographic Merchants' Board of Trade, held its seventh meeting in February, 1885; no later record. The Secret Order of Scientific Photographers, founded in Minneapolis in 1885 and issued a printed constitution; was intended to include all professional photographers, assistants, stock dealers, and manufacturers in America; last record, 1886. Jackson (Mich.) Photographers' Union, founded 1886. Association of Operative Photographers of New York City, had an employment bureau, and held social and business meetings; formally dissolved in 1886, after a long and useful career; cause of dissolution, lack of interest. Pottsville (Pa.) Photographic Association, founded 1886. Texas Photographers' Association, founded 1887; held one (or two?) convention; no record since 1889. Kansas State Association of Photographers; held a convention at Wichita (Kans.), 1888; no later record. Southern Tier of New York Photographic Association, founded 1888; met at various towns; no record since 1890. Toledo (Ohio) Photographers' Association; last record, 1890. Photographers' Association of Lancaster (Pa.), founded in 1891; held one or two meetings. United Retouchers' Association, founded, St. Louis, 1892; intended as a national union with local centres; no records.

To this list I suppose I must add that ill-fated association which seemed to start under good auspices, but which turned out a fraud rather than a failure, and which has done much to increase the distrust with which many photographers regard all efforts at union—The Photographers' and Artists' Mutual Benefit Association. It is to be regretted that such a promising association was not honestly worked, but I think it is more to be regretted that the large number of good and honest men who joined it had so little cohesion as to allow a valuable scheme to be wrecked by the treachery of one or two men.

From the British side I have no such record, partly, no doubt, because I have unfortunately been able to devote but little time to investigation, but mainly because there have not been the numerous efforts. Unions and combinations have often been suggested, but seldom formed. In fact, there are only two of any importance that I can record as failures. The first of these was the Photographic Manufacturers and Dealers' Association, founded in London, 1891. It arose out of an informal meeting of photographic advertisers called to take concerted action against one of the photographic magazines. It became a trade-protection society, employed a paid secretary, and opened and furnished an office in London. It made status enquiries, collected bad debts, and held meetings to settle questions of discount and prices. Through jealousy and mutual distrust it broke up within a year. The Photographic Artists and Assistants' Union, founded in London, 1891, was intended as a trades union on the ordinary lines, to grant sick-pay, burial-money, and out-of-work grants to its members; to keep registers of assistants; to act as an employment bureau, and to generally work in the interests of the assistants. It held preliminary meetings and drew up a constitution, but only some thirty odd applications for membership were received, so the society never floated.

From other parts of the English-speaking world I have records of only two spasmodic efforts. In 1891 the photographers of Christchurch, N. Z., formed a successful combination to stop price-cutting. And in the present year a number of the Australian photographers made common cause with other members of the public to expose and ruin the free portrait swindlers.

(To be continued.)

Winter Photography in the Alps.*

BY ELIZABETH MAIN.

ALTHOUGH it is now twenty years or more since winter visitors first came to the Alps, few photographs have been preserved which render faithfully an Alpine valley in winter. The subjects ready to hand are varied and beautiful, yet somehow one seldom sees first-rate photographs of these high-lying districts under snow.

Those who have so kindly asked me to prepare this paper have greatly over-estimated my capacity for telling you some new thing. Still, bearing in mind the fact just referred to, it is evident that few persons have made a study of landscape photography at that season in the Alps, and thus, perhaps, the experience of one who has worked in that direction may be of some interest.

Those taking up this branch of their art are usually handicapped at the start by their belief in an article of faith—and of little else—laid down by the majority of English photographers, who declare that snow should never be photographed in a bright light. I dare say that in your sunnier climate, which must offer many more opportunities for experimenting in winter photography than does that of Great Britain you have already discovered that brilliant sunshine is essential to the best results. But in case any among you still holds to the unsound maxim, I would ask him to bear in mind exactly what snow is; that it is uniform in colour, almost smooth of surface, and on dull days without distinct outline against a gray sky. It must therefore be built up, so to speak, and modeled into that miracle of fairy delicacy and lightness which, under favourable conditions, it may become. We can have it at its best by working with suitable light at suitable hours, and now and then calling to our aid one or two artificial but inoffensive contrivances. At mid-day in winter the light falls too directly on the subject; the lace-like tracery with its system of innumerable tiny snow crystals obtains no relief against the white robe, standing hard and stiff around rock and chalet. But go early in the morning or late in the afternoon and note the change. You will find in the long, soft shadows, a thousand exquisite half tones. See how the highest and nearer lights are broken, and broken again by the thin veil of surface crystals, each with its perfect modeling, its tiny shade throwing up its starlike form. Look at the rounded, billowy flow of the snow where, half in sunshine, half in shadow, it sweeps around and over the inequalities of the ground. If there has been a mist, however slight, during the night, a fretwork of hoar-frost will cover all, and will complete the materials for as fine a subject as you can wish for.

You may find it desirable to use, in addition, the artificial contrivance to which I referred, and by shoveling some of the snow, or trampling out a track, break up any portion of the picture where the uniformity is too great.

And now, having placed your subject under the most favourable conditions, what is the best way of photographing it? My own experience leads me to think that slow plates are far the best, so that when used with a small stop, the exposure can be as prolonged as possible. I have always used Wratten and Wainwright's ordinary plates for this purpose, with one of Ross's portable symmetrical lenses, and with the smallest stop. I give under the conditions of

* Read at the World's Congress on Photography, August, 1893.

light just described an exposure of two seconds. In developing I am careful to work up the plate very slowly and to carry the development very far, and when finished I expect to find a range of density from excessive blackness to clear glass; but though there must be no mistake about the quality of these two extremes, there must be very little of either. It is on the variety of the half tones that the success of the picture depends, and it is for this reason that in photographing snow, correctness of exposure is of such prior importance; and therefore a slow plate, allowing of more laxity in exposure than a rapid one, is far easier to work with. A plate under or over exposed can never, however skilful the development, give a perfect result if the picture is of a snow-covered landscape, as the half tones must suffer from the error. I have used the iron developer, eikonogen, and pyro and ammonia, and for snow, have obtained the best results with the latter. I may add that when developing photographs of large moving figures, taken in winter in the Engadine, on our skating rink, I get the most successful pictures by allowing the plate to flash up at once under eikonogen and continuing the development until the principal object is hardly visible when viewed by transmitted light. For studies of this kind, I have had the best results with Lumière plates.

But I have digressed from my subject—because, probably, I had so very little to say. I have now all but done; but before concluding I should like to draw your attention to the fact that very beautiful effects can be obtained in Alpine photography by facing the camera to the sun, which, of course, should be just *out* of the plate. For most subjects (water and clouds excepted) such lighting is rarely suitable, at any rate in so extreme a form, but with snow I have obtained most charming studies in this manner.

In response to so great a compliment as has been paid me in requesting me to write this paper, it would have been ungracious on my part to have refused, but I must ask you to forgive the very inadequate manner in which I have responded, for I know but little of the technical side of photography, and of the practical side am but self-taught, by my love of an art the beauty of which has always warmly attracted me.

Stereoscopy.*

By W. I. Chadwick.

One would think it hardly possible in these days to meet with anybody who does not know what a stereoscopic slide is, but I assure you it is not an infrequent occurrence to find good photographers who have not the slightest idea why a stereoscopic slide consists of two pictures, or in what way these two pictures differ; and, indeed, I might even go a step further.

Not very long ago a member of this Society called upon me, and, in the course of conversation, he said that he had never seen any use in stereoscopic slides; he had a stereoscope and some slides at home, but he could see the pictures best without the stereoscope. I gave him some of my slides to examine, and he very soon altered his ideas, and became deeply interested, and wanted to know more about them. In the course of a very agreeable chat, I asked him if it had ever occurred to him why he had two eyes? "Oh, every fool knows that!" he said; "it's so that, if I get one knocked out, I have another to fall back upon." But I think our friend would be able to give a better reason now for his having two eyes, for he has since become a most enthusiastic stereoscopist.

Now, as the whole principles of the stereoscope are involved in binocular vision, we had best begin by a little consideration of the sense of sight.

The sense of sight has been called distant touch; it enables us to perceive light, and to distinguish bodies, not only their colour, form, and distance, but also as to their motion or repose.

The organ of vision is composed of a *receptive apparatus* and an *apparatus for transmission*. As a receptive apparatus we may compare it to a photographic camera and lens. We have a nearly globular chamber, composed of a thick, strong, white substance—the *sclerotic coat*—part of which is seen as the white of the eye. The inside of this chamber is interlaced with minute blood vessels, covered again by a thick black pigment, called the retina, and the whole is filled with a transparent jelly; in front is a transparent convex membrane (the *cornea*), fixed, like a watch glass, into the sclerotic coat, and behind this is the *crystalline lens*, covered in front by a curtain, which is perforated by a round hole in the centre, and is called the *iris*.

It is by means of the crystalline lens, which is bi-convex in form, that images are formed on the retina, and, as in the case of any other bi-convex lens, the image formed is inverted, just as the image formed by a photographic lens is inverted on the ground-glass screen of the camera; but, as we all know, the photographic lens, as it is generally used, has no fixed focus; the nearer an object be brought to such a lens, the further from the lens, on the other side, the sensitive plate must be placed, and *vice versa*. For this reason we have a rack-and-pinion movement to our camera for focussing; but in the eye we have no rack-and-pinion movement, but we have an elastic lens which automatically flattens or bulges, to become longer or shorter in focus as we observe distant or near objects; thus the crystalline lens has the *power of accommodation*, as it is called.

The iris, too, is automatic in the adjustment necessary for more or less light admitted to the eye.

The reception for the inverted image is, as has been said, the *retina*, which is an expansion of the optic nerve by which light impressions are transmitted to the brain. The eye then receives impressions for the inspection of the mind.

But the *retina* is not equally sensitive over its entire surface; indeed, there is but one spot near the centre where distinct vision is possible. This is a yellowish depressed spot, sometimes called the "pit" (or *forea centralis*), so that, when observing natural objects, we only see distinctly a very small area at a time, all other parts are indistinct, or what a photographer would understand as out of focus, or very inferior definition; but the rapidity of the movement of the eye enables us to combine the successive images, and we know, from experience and the sense of touch, what they mean. To make this part of our subject still more clear, let us look at a landscape in nature. We concentrate our attention upon a tree. Now we see only the tree or a portion of it distinctly for the moment, all other parts of the landscape are more or less out of focus; but as we desire to see other parts of the landscape, the movement of the eye and the accommodation of the crystalline lens instantly adjust themselves to produce sharp or distinct impressions of whatever part we turn our attention to; thus, "whatever we want to see we look at, and we see it distinctly; what we do not look at we do not as a rule care for at the moment, and so do not notice how imperfectly we see it.

Here I would suggest that a little study of the theory of vision might assist the followers of the school of out-of focus photography—misnamed naturalistic photography—to a modification of their ideas.

Well, up to now we have only very briefly considered vision with one eye, and before we leave this part of the subject I must remind you again that the retinal picture is inverted both as regards top and bottom, and right and left, of the actual objects just as the image is inverted on the camera ground glass. Then the question follows: How do we get the impression of their true position? The theory of vision cannot be explained by anatomical facts, so that many hypotheses have been invented to explain it. The most reasonable of these is that of the late Professor Fick, by assuming that, as all retinal impressions are conveyed to the brain for the inspection of the mind, the nerves of sight and those of feeling are co-operative, or in correspondence.

If some of us forget our own first difficulties in composing a picture on the camera ground glass, we can call to mind the difficulties of photographic tyros. It is only by constant practice that we can adjust our instrument, and, when this is attained, there is no difficulty in arranging the composition of our picture; we may cut off the foreground, balance the sides of our picture with perfect ease—in fact, so accustomed are we to the inverted image on the ground glass, we do not even notice that it is so; but, when the negative is developed and printed, we can no longer tolerate its inversion, and to judge of its composition, or even to examine its detail, we turn it right side up.

As I stand now, I see the President in his chair, and, although the image of him on my own retina is inverted, I know that his head is up and his feet are down; and if I now turn my back upon the President, and assume the ungraceful position by bending my body with my head down between my legs, the retinal image of the President will be *reversed*, but I have still the impression that his head is up and his feet down.

Another instance of the correspondence in the sense of sight and that of touch is demonstrated by a man who shaves before a looking-glass. Those who are not accustomed to shave are in fear of cutting themselves, for the razor seems to go the wrong way. The same thing is experienced by young microscopists in attempting dissections under a microscope.

But it is time we began to consider vision with two eyes, or binocular vision as it is called. When we look at an object with two eyes we receive two retinal images, one in each eye, and yet, under normal conditions, only one impression is produced in the mind. We direct the optic axis of both eyes to the one object, therefore they converge, and the images, falling upon corresponding parts, are transmitted by corresponding nerves, which may be described as bundles of fine fibres, the inside set of which cross like the reins of a pair of horses, and are brought together before entering the brain.

The power of convergence of the optic axis to one point is attained in infancy, and I have no doubt many present can call to

* Fairfield Camera Club.

mind a very young baby before it begins to "take notice" has a very vacant look about the eyes; it disregards the fond father as he approaches or recedes. The nurse draws her hand over the organs of vision as she notices the baby's eyes sometimes diverge, and this, she says, is to prevent it from having a permanent squint; soon the baby acquires the power of convergence, and then the nurse says baby is beginning to "take notice." But everything to the baby is upside down as yet; very often the bottle gets knocked over, and sundry other things go wrong, the baby begins to turn and twist its little hands about and examine them very carefully. Now is the time the direction of motion is beginning to be learned. Then toys are given, a soft ball, say, which baby throws away and cries for it to be brought back; no sooner is it restored than away it goes again, and father says it is getting tiresome. Then it hits its little nose, and cries again. Now, the facts are, the baby did not intend to throw away the ball or to hit its nose—things went the wrong way, like the razor to the man who is not accustomed to shave. Later on, other toys are given to the child, which are turned over and over; then the sense of touch and of sight are becoming associated, and soon we gain experience.

It is by this convergence of the optic axis that we are enabled to estimate the third dimension, distance; but it will be seen that when we view an object in nature with two eyes the retinal images are not alike, because they occupy different stations, just as if we take a photograph, then move the camera the distance our eyes are apart, viz, 2½ in., and expose again, the two pictures will be dissimilar; and it is by the association in the mind of these two dissimilar retinal pictures that we know from experience we are looking at a solid object or a landscape in nature. If we place two similar objects, say, two billiard balls, in the centre of a billiard table, and look at them with two eyes, we shall see two balls of a certain size and at a certain distance; but if we direct the axis of the right eye to the right-hand ball, and the axis of the left eye to the left-hand ball—which may be done by two tubes—there will be the retinal image of only one ball in each eye, and the mind will unite these as one, and we see them as only one ball; but, in consequence of the optic axis having little or no convergence, the 'one ball' looks very much further away, and therefore very much smaller.

It is also quite easy to concentrate the attention to an image formed in one eye, and to disregard a different image formed in the other eye, as is the case when a microscopist applies one eye to his monocular instrument, at the same time keeping the other eye wide open; he sees only that which he concentrates his attention upon (through his microscope); this is called the *rivalry of the retina.*

Now, it will be understood that a man with a permanent squint, that is to say, having no power to converge the optic axis to one point, would most certainly see double, if it were not from the fact that he disregards the retinal image of one eye, and consequently he sees no better than a man with only one eye. This experiment may be tried by rolling two pieces of note paper into tubes, and applying one end of each to the two eyes, the other end diverging objects may be observed through either tube, and seen distinctly, but it is impossible to see distinctly through both tubes at one time.

Now we are able to perceive that, although with two eyes we converge to the same spot and see that spot distinctly, the indistinct image or out-of-focus parts of the object or of surrounding objects are not alike in each eye, and by falling upon portions of the retina which are not in correspondence these images are doubled, but by being indistinct and our attention not upon them for the moment we do not notice that they are double. Here is an illustration: If I hold my finger, say 8 in. in front of my nose, and now look at the wall opposite, first with one eye and then the other, there will be certain parts of the wall obliterated in each case because my finger blocks the way, but when I open both eyes there is no portion of the wall I cannot see, notwithstanding that the finger still remains, and the indistinct image of the finger gives me the impression that two fingers are there; indeed, I really see indistinctly *two* fingers, but, my attention being upon the wall, in the ordinary course of things I should not notice the finger at all.

If, now, we look at a box on the table with one eye, we get an impression such as a single photograph would produce; with the other eye we get another view of the box; when we open both eyes these different images are by experience from infancy associated with what we know to be a solid box of a certain size and depth and at a certain distance.

If the box be removed to a more remote position, we see it with less convergence, and we estimate its distance by the amount of convergence more or less; then, if we move two photographs of the box, such as would be seen by the right eye and the left eye separately, and present these to their respective eyes separately, the mind combines the retinal images, and we get the same impression of size, shape, and distance as in nature, colour, of course, being absent.

To do this is the science of stereoscopy. Stereoscopic photographs are, for various reasons, generally taken on one plate by a camera provided with twin lenses and a division inside the camera, so that we have practically two photographic apparatuses combined in one body. Now, the picture taken by the right-hand lens must be presented to the right eye, and the picture taken by the left-hand lens must be seen by the left eye. And now let us see how this is to be accomplished in practice.

We hold a stereoscopic negative in the same position that the plate occupied at the time of exposure, viz., inverted, with the film side away from us, the picture taken by the right-hand lens is on our right; if we turn the negative to get the image right side up, as we say, we find the right-hand picture is now on our left, and a print from the negative would have the same fault. This is caused by the fact that each photographic lens inverted its image independently of the other, and what we have just done with the negative is to reinvert the two together; and the only way to correct the inversion caused by the lenses is to reinvert the two separately, or, what amounts to the same thing, transpose the pictures. Sometimes this is done by cutting the negative, and then a single print may be taken from the transposed negative and mounted in the ordinary way as for a single print; but as there are some delicate points to observe, and as amateur photographers are not usually expert glass-cutters, the transposing and trimming is oftener done in the prints.

In making transparencies on glass from uncut negatives a special printing-frame is generally employed by which the right-hand side of the negative is printed on the left end of the transparency plate, then a second exposure is made on the other end of the plate from the left side of the negative, or the same camera and lens used to take the original negative may be employed as a copying camera, in which case the lenses reverse the negative image independently, and thus transpose at a single operation, or with one exposure.

The next thing to consider is the size of a stereoscopic picture, and to arrive at this we must not forget many things that have been said; we know that the pictures must be observed with no more and no less convergence than would be employed in viewing the natural object or we shall get wrong impressions of distance, and therefore of size, and, as our eyes are only 2½ in., or 2⅝ in. apart, it would seem that to be able to see corresponding points in pictures mounted at wider centres, a divergence of the optic axis would be necessary; but by employing slightly prismatic glasses in the stereoscope it is quite possible to combine pictures up to 3 in. centres, but any increase on 3 in. is apt to produce a strain upon the eyes and become so painful as to condemn the stereoscope.

If 3 in. be considered the limit, it is clear that the pictures cannot be larger than 3 in. wide. The depth is not controlled by the same conditions, and may be anything up to 4 in. or more consistent with the composition of the view or the taste of the photographer. Now, objection has been taken to the smallness of the stereoscopic slides, but the objection has no foundation in fact, for it has been clearly demonstrated on many occasions that when a photograph is viewed at the angle at which it was taken, that is to say, at a distance from the eye of the observer equal to the length of focus of the lens employed to tone the negative, we get the apparent natural size of the object; thus a 3 in. square picture taken by a 5 in. focus lens, and viewed at 5 in. distance, would convey the same idea of size as another picture 6 in. square taken by a 10 in. focus lens, and viewed at 10 in. distance; it follows, then, that if a stereoscopic negative be taken by 5 in. focus lenses, the stereoscope should have lenses of the same focus, for in that case we have the apparent natural size, and therefore larger pictures would have no advantage. Of course, when a picture or a photograph is framed, or even mounted in an album, there are surrounding objects that are taken notice of, and these may interfere with the retina impressions; but by a stereoscope all surrounding objects are excluded, we should see nothing but the picture, and for this reason the card mounts for paper slides should be black or very dark in colour (not to be seen), and when transparencies on glass are printed they should be bound up with black paper masks showing nothing but the actual picture.

It has already been said that the pictures should be mounted or marked at not more than 3 in. centres; but if a properly made stereoscopic slide be carefully measured—no matter at what centres it be mounted—it will be found that corresponding objects in the foreground, and the point to be most regarded is the printing and mounting, and this seems to have the least attention in the commercial slides published at the present day.

(To be continued.)

The Amateur Photographer 1893 Prize Lantern Slides.—The prize slides for 1893—4 will be available for loan to societies after October 13th. The secretaries of societies are desired to make early application for them.

THE HARDY ANNUAL.

1893-4.

37th Year Issued.

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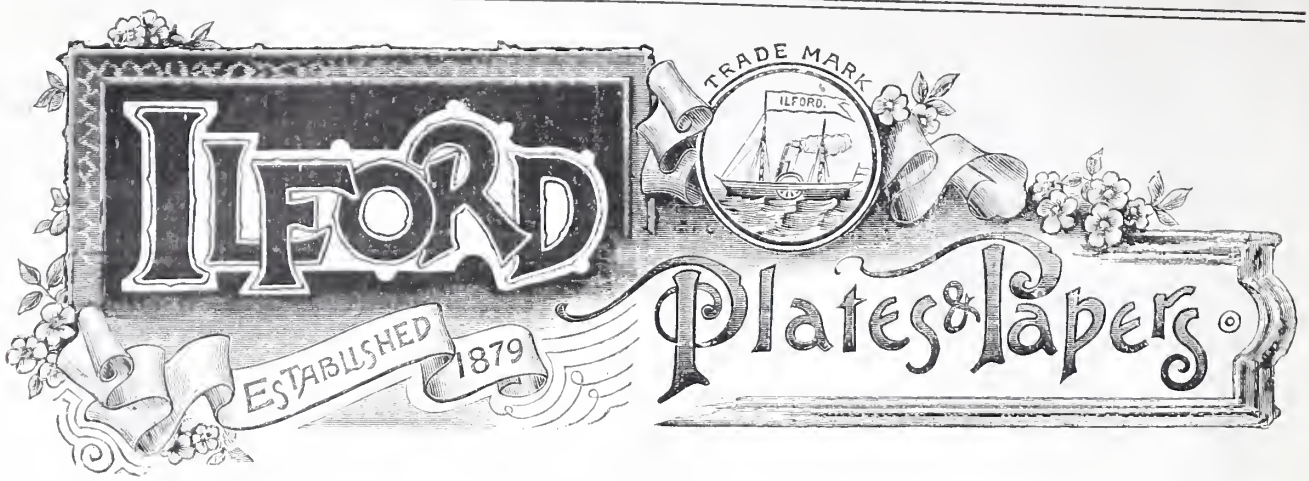
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THE WEST SUSSEX QUADRILATERAL.

By the Editor.

(*Continued from page* 114.)

Second Day.

Arundel was again our starting-point, because we wanted to do a little hard work in the shape of rowing, so, taking a boat, we pulled quietly up till we reached North Stoke, where we landed, had a frugal luuch of ale, bread and cheese, and visited a small and interesting Old English church with a curious little tower and narrow lancet windows with a very wide splay inside. We managed to get the key by getting over the churchyard wall—where we found some old tiles arranged in herring-bone fashion—and asking at a cottage. After this we had another pull up to Houghton Bridge, where we landed, and, although detained in an inn by very heavy rain, we, as soon as it lightened a little, started for a walk to Amberley Castle. This is extremely interesting, and no difficulty was made of our photographing where and what we liked; in fact, here, because it was raining heavily, we were kindly given the key of the summer house so that we might shelter; but, regardless of the rain, we exposed six plates, all of which turned out successfully. The church here is extremely interesting, and the chancel arch is a very fine specimen of early Norman zig-zag work, the two piscinæ, one in a South aisle, the other in the chancel, showing that either the chancel has been added later or else that there had been there a side chapel. The disposition of the windows is curious too, some being evidently of much later date than others and evidently put for the convenience of the clergyman or squire. By the side of the pulpit will be seen an old iron bracket which was used by the Puritan preachers for the hour-glass timing their discourses. Several half-defaced mural paintings are to be seen here and a brass in very good state of preservation. The vicarage is curious too, in that part of it is thatched, evidently of earlier date than the rest. In the churchyard is an old sun-dial and a magnificent yew tree. Just outside the churchyard will be found a good point for a general view of Amberley High Street, with quaint thatched cottages and the distant downs all forming by no means a bad little picture. By retracing one's steps and going round the Castle into the meadows a very good general view of this old ivy-covered ruin can be obtained.



High Street, Amberley.

We had by this time nearly done enough, and consequently wended our way back to Houghton Bridge Inn, which is only about half a mile, where we had a first-class tea at a very reasonable rate, and everything spotlessly clean and nice. Houghton Bridge itself is worth a plate, but it requires a little ingenuity to avoid making an ugly line of it, as it is very long. A fisherman or two can generally be found here, and they will frequently pose in the foreground to break it up well.

It is essential for those who wish to do as we did, that is, pull up the river, to learn about the tide, which is very strong, and no joke to pull against for about six miles. We were fortunate enough to catch the tide in the morning, and then again later in the afternoon. Of work on the way up I have said nothing, not because it is not possible, but because I did none, though some really fine pictures were to be had. The Arun is clothed on either side with bullrushes, water flags, and for some considerable distance the river runs below wooded heights, which strongly recall Clieveden, and Quarry Woods reaches on the Upper Thames; for the botanist, the disciple of Izaak Walton, the entomologist, as well as the photographer and it forms a rich field. Here we find clumps of the wild clematis or travellers' joy, huge beds of the willow herb epilobium hirsutum, the wild peppermint, and valerian, besides numerous other botanic treasures. The frequent splash and ever-widening circle bespeak the hungry fish, and many a lover of the rod and line is to be seen on its banks. Here, too, are the curious sheep who scamper off, and then turn and look with wondering eyes, or

> "The steer forgot to graze,
> And, where the hedgerow cuts the pathway, stood,
> Leaning his horns into the neighbour field,
> And lowing to his fellows."

Short, Suggestive Notes by Mr. Marshall.

THE ARUN.

Before your river trip to Houghton Bridge, read the following Historical Notes on our excursion district. Do not shrug your shoulders. Granted the notes are uninteresting, the "general notes" will lose much of their value and you much of your pleasure without this bird's-eye view of your position historically. At least, I think so.

Our Historical Periods.

The Prehistoric, the age of the Celt and the Gaul, the ancient Briton so called, whose record is found in the names of places, in earthworks, in barrows or burying-places, in flint tools and weapons.

The Roman, B.C. 55 to A.D. 410. His record is found in names of places, in his adaptations of Celtic earthworks, in portions of his walls and buildings, in his building materials used by later builders, in the pavements of his villas, in his burial-places, in his pottery and coins, and above all, his roads.

The Saxon, 470-1066. His record is found in names of places, in his village settlements, in his county divisions, of napes and hundreds, in churches, in his burial-places, in his coins.

The Dane, who has left small record of himself, since for some cause or other he troubled the South Saxon but little.

The Norman, from the Conquest, 1066, till the reign of the first *English* king, Henry II., who represented the union of Saxon and Norman. The record of the Norman is left in his castles, his aristocracy, his enclosed hunting parks, his feudal tenures, his game laws.

The English period, from the reign of Henry II. to the present time, when our country mansions have been built, our churches have been extended, and many of these extensions allowed to decay, when our monasteries and abbeys have been suppressed, and their revenues given to laymen. The period of the Early English, the Decorated, and the Perpendicular in architecture—a period in which our district almost marked time till the reign of the Hanoverian kings, and in which the march of progress has left—many of us think happily so—old English surroundings, and the old English spirit.

Specially note, that we have between the appearance of the Roman and the Conquest of the Norman, an historic period of no less than 1,100 years. Add to this the prehistoric period — some say of more than a thousand years—and then the period of 800 years since the Conquest, of what we term the English period, and we find that our excursion district connects us with the history of some thirty centuries.

Ella, the Saxon chief and his three sons, of whom Cissa was one, lands at Selsey 470. The Britons are driven to the forest of Anderida, north of the Downs, the Saxons spread along the shore to the east, and make their way up those ready-made roads, the valleys of the rivers Arun, Adur, Ouse, and Cuckmere. Each group of families fixes its home in a separate village, to which is given the name of its kindred, followed by the affix, "ham," which means home or dwellings, or by the affix "tun," which denotes the earthen mound thrown up for defence. The cultivated land is surrounded by either

wood or pasture or open common ; the cottagers' bees supply honey for sweetening and for meads, his hogs fatten on the acorns and beech of the woods. In later times many of the freemen of these settlements, and their huts are clustering round the house of their superior lord, in many cases protected by the earthworks of his predecessor, the Briton.

The Norman Conquest. That great register of property, the Domesday Book, compiled nineteen years after the Conquest, shows the transfer of these Saxon manors to Norman ownership, but of this later on.

Now to our river Arun and a little geography.

Take your map. To the south of Clymping the Arun enters the sea at Littlehampton ; trace its course to Pulborough. At Arundel the Downs are reached. Between Arundel and the English Channel is an alluvial plain, which once formed an estuary of the sea, and over the low-lying lands of which, in later years, the high tides spread a sheet of water. The Saxon settlements were placed on the higher tracts. Of these we find the Domesday record in a distance of ten miles as the crow flies—of Littlehampton, Clympton, Tortington, Lyminster, Arundel. Warningcamp, Offham, Barpham, Wepham, the Stokes, Amberley, Bury, Hardham, Pulborough.

Here is a Domesday record of one settlement, Lyminster :—"The Earl himself holds Lolinminstre in demesne, King Edward held it in demesne. There are 20 hides. There is land for 4 ploughs and 68 villeins and 43 cottars with 40 ploughs. There is a church and a mill of 5 shillings and 2 salterns of 20 pence and 8 acres of meadow and wood for 30 hogs. In the time of King Edward and afterwards, and now worth £50"

Explanatory Notes on the Doomsday Records : — "The Earl," Earl Roger, to whom William I. gave almost the whole of the district covered by our map "in demesne," the lord's proper men, who were wholly under his power both in body and goods. "Hide," land sufficient for the cultivation of one plough, "Villeins," those who with their children and effects belonged to their lord. "Salterns," pans for obtaining by co operation salt from sea water, which at the time of Domesday probably flowed to Arundel.

We are now to leave the plain, and enter the valley between the hills. Take a boat at the bridge, go up with the tide, passing the rife from Warningcamp, in which a British canoe was found—then the Black Rabbit, and just missing Offham (the home of semi-mythic Chief Offa), keep the main stream *on the right*, to Barpham (Bercheham, the fortified home).

Note the names ; they teach much. In no part of England has there been less change in the names of persons and places since the days of the Heptarchy than in Sussex. If space can be found later on, a glossary shall be given.

Land.—The high chalk bank before you once came close to the river, and was the protection on that side to the Celtic earthwork above. Take the inclined path towards the church ; on your right is the fosse, and behind it the vallum ; follow the vallum until you come to the depression, once a marsh, on the third side, and you will realise this strong Celtic fort for the protection of the river valley.

Enter Barpham Church. Compare the plain semi-circular arch and splayed windows of the north transit with the handsome recessed arch with zigzag mouldings and the windows of the south transept, and then the pointed arch of the south aisle. The ribbed groined roof of the church and the chancel arch speak of the Early English builder. The tower is said to be of the Perpendicular period. An hour will be well spent here, and surprise will be felt that such a church and well-to-do village should hold its ground, cut off from all high roads. The old Celts had not overrated the importance of the position.

Now to the boat ; pass Peppering, four vessels of which tithing were granted to the monastery at Selsey by Nunna, King of the South Saxons, that prayers should be offered for him day and night by the servants of God. The British canoe with the wooden anchor, which may now be seen in Lewes Castle, was found in a creek near.

Pass South Stoke (Saxon, *stow* or *stoc*, a dwelling-place), find the proper landing. An interesting half hour may be spent in this quaint little village and church.

North Stoke is on the other side of the river, but neither its odd little church with its bell tower astride the north transept, nor its strong Celtic earthwork on the steep slope behind the village are worth delaying you. In the creek a canoe was found, and it may be seen in the British Museum.

Houghton Bridge. There was a time when to build a bridge was considered as pious an act as to erect a church, and we find Bishop Storey in 1478, granting an indulgence of forty days to all who should contribute to the repair of the bridge.

Walk on to Amberley, keep the road to the left, leading to the Wild Brook under the Castle, and view the castle. Where you now stand was once a vast bog, which could at any time be flooded for the protection of the castle by putting down the paddles at Houghton Bridge. On the borders of this morass was the great wood of Andredswold, in which the pigs of Amberley pannaged.

Now return to the Castle. For verified antiquity Amberley stands before Arundel. The copy of Ceadwalla's Charter in the cathedral archives shows us that the manor of Ambrelie was granted to Wilfrith, the first Bishop of the South Saxons, in about A.D. 670. Domesday tells us that the Bishop of Chichester *himself* held Ambrelie, and we have almost an unbroken record till 1447, when Bishop Adam Moleyns enclosed 2,000 acres of woodland to form a hunting park.

Do not puzzle over the date of the Castle. William Rede, Bishop of Chichester, by special licence from King Edward III, in 1377, strengthened and crenellated Amberley episcopal mansion. Don't listen to tales of the destructive propensities of the Commonwealth soldiers under Waller. When the Bishop of Chichester decided, and rightly so, to live at headquarters, old age and neglect soon gave us the ruins we admire. These you may examine, and allow your fancy to deal with, without fear of antiquarian corrections.

But on your right is the window of the old court-room, on your left is the conjectural water-gate respectiug which the Rev. G. A. Clarkson, the vicar, has written in his deeply interesting "Notes on Amberley :" "Hospitable apartments surround the court-yard (Ballium), out of shot of catapults and all other curved line missiles. Imagine Bishop in his castle ; attack impends ; cattle and all the best goods of tenants and other dependants are sheltered in court-yard. The owners form the garrison, their wives and children are protected from the violence of the enemy. The possessor of Arundel Castle (if the Bishop's friend) stops the watercourse at the bridge with paddles, and floods the Amberley Wild Brooks to the navigable depth of the (flat) boats, which are a water communication of the garrison. Stores pour in, and hay, needed by the crowd of cattle in the courtyard, is landed at the water-gate inaccessible to the besiegers."

The Church.—Picture the church without its chaucel, or a very small one, also without its south aisle and tower, but with two windows on the north and two on the south side, and you have your very early Norman or Saxon church. Now mark Bishop Neville's work in the chaucel, with its beautiful arch and its lancet windows, and you have a specimen of the finest remains of the later Norman period. Mark the pointed arch of the south aisle, and the tower, and you see 13th century work. That window in the tower, looking towards the nave, was once the doorway to the gallery at its west end. Do not miss the old stand for the hour-glass near the pulpit, which did duty in timing the Puritan preacher's sermon.

Do not hurry away, walk through the old-fashioned village and in the Wild Brooks, and you will understand why Amberley folk were said to be web-footed, and see the force of the local saying, which made the Winter reply to the query, "Where do you belong?" "Amberley ; God help us!" and the Summer reply "Amberley ; where would you live?"

(*To be continued.*)

Societies' Notes.

Mr. T. W. Sharpe has been appointed Hon. Secretary to the Glossop Dale Photo. Society, *vice* Mr. J. Walton, resigned.

At the May Technological Examination of the City and Guilds of London Institute, Mr. F. W. Pilditch, Hon. Secretary of Aston Photographic Society, obtained a first-class in photography, and was awarded one of the three medals offered by the Council as a result of being placed third in the list.

NOTES FOR CAMERA WORKERS ON NORTH WALES.

Although a goodly number of articles, and even whole books, have been written to inform people how "to see North Wales," it is possible that one who has lived for a length of time at different points, may be able to add an item or two of interest to some out of the many who will visit the principality this month and next.

I think amateur photographers may fairly be divided into three classes : seekers after the picturesque in architecture, glen and cottage photographers, and last but not least, hand-camera workers.

The architectural hobbyist will find Rhuddlan Castle well worth a visit. About three very pleasing pictures may be taken—all afternoon views. If Rhyl is the first stopping-place Ruthin could be visited early in the day and some very nice street views may be secured in that picturesque little town. Denbigh Castle could be visited on the return journey, although hardly anything can be done there, for it has been converted into a place for picnics, etc. Then Rhuddlas, and if bent on a hard day's work, St. Asaph Cathedral may be photographed from the bridge over the Elwy up to going-to-bed time.

I think Ruthin would provide material for a whole day's work, if time is not an object, still two or three early morning and mid-day views are to be had.

From Rhyl to Conway is a short run, and there are two or three views worth a few plates in and about the old castle. Take care you have a short-focus lens for the Banqueting Hall. Of course, Carnarvon Castle is the centre for one day's work. If you arrive in good time in the afternoon a nice view of the castle may be had from the quay.

Criccieth and Harlech may be worked from Portmadoc. Lodgings are more reasonable there, I think, than at either of the more essentially summer resorts of Criccieth and Harlech. Criccieth Castle is not of much account, but the town and district will afford good scope for original work, as they are not so overdone from a photographic standpoint as some of the better-known places.

It has been said that even street views in Criccieth are pictures, but that was truer of the little town some years ago than it is now. To the glen and cottage photographer I would recommend Ruthin as the first stopping-place, and from Ruthin to Bontuchel in the Gyffylliog valley as the first day's out. Bontuchel is something on the lines of Bettws y-Coed. The grandeur of Welsh mountain scenery is not perhaps at its best in this out-of-the-way valley, but for camera work the river meandering under trees and beneath tumble-down old planks, as bridges, passing by whitewashed cottages, the banks thick with vegetation, while great boulder-stones are scattered in great profusion on every hand, enable the man who is not in a hurry, to do some good work.

Barmouth and Dolgelly are noted centres for this class of pictures, but it is a long journey from Ruthin; if, however, it is undertaken, Carnarvon and Criccieth can be taken *en route*; and if you do not object to a long walk, when you are in the neighbourhood go to Clynog. It is a very interesting little village, quite out of the beaten track, and as it has not conformed to modern ideas in many ways, it has some pretty bits for the photographer. I might mention Talycafn and Roewen, near Conway, as pretty little villages—or rather hamlets.

Needless to say, quaint old homesteads and lovely little glens and glades are plentiful throughout North Wales. I merely indicate spots where, perhaps, more plates can be exposed with advantage in a short time than if, unaided, the amateur went seeking for himself.

If the coast line is familiar to the reader, I might suggest, as an alternative route, Wrexham as a stopping-place—the church is interesting, and Wrexham is the centre for the Gresford Valley. Gresford Mill and the river are very picturesque. From Wrexham to Whittington Castle is a short railway journey, but I am quite sure no seeker after a lovely bit of river would regret the visit. Llangollen and Bala are in the vicinity, and at both places there is ample scope for camera workers.

To the hand-camera devotee I would just suggest a visit to one of the large towns, say Carnarvon. On a fair day some good things could be had, especially in the early part of the day.

Apparatus.

ADAMS AND CO.'S VIEW-METER.

Adams and Co. have submitted to us one of their view-meters, which is constructed of aluminium and is exceedingly light and neat. A view-meter constructed on the same principle has been an indispensable part of our impedimenta for years, and we have often regretted that no one has placed one



on the market. Having once made the necessary calculation, it is only necessary to fetch one's meter out of the pocket and look at the view, sliding the outer tube to and fro till the picture is seen to be correctly balanced and composed, and all one has to do then is to glance at the tube to see what focus lens to use, and set up the camera.

Such an instrument as this is a distinct gain to the artistic worker, as it saves a lot of time and trouble, and at the reasonable price of 7s. 6d. it should become the valued friend to every photographer.

THE TWIN-LENS IDEAL HAND-CAMERA.

Adams and Co., of 81, Aldersgate Street, and 26, Charing Cross Road, have submitted one of the above, the latest development of their well-known Ideal, for notice. In appearance it is the usual black leather-covered box, and measures $8\frac{1}{2}$ by $4\frac{3}{4}$ by $8\frac{3}{4}$ in., and weighs about 5 lb. when charged. The changing is effected in the same manner as the original Ideal, with the exception that the knob is on the top instead of underneath the camera. The operation of changing automatically registers the number of plates exposed. The lenses are Wray's $5\frac{1}{2}$ RR detective lens, the working aperture being $f/8$, though two smaller diaphragms are provided. The shutter is specially designed, pneumatically regulated, and works across the diaphragm slot, and is arranged to give exposures from 1-100th to 1 sec., prolonged exposures also being arranged for. The shutter is "ever-set," and has a self-capping device. Focussing is effected by a small milled-head screw at the side, the full-size view being seen in very great brilliancy, both vertically and horizontally, and it is so arranged that the brighter the light the more vivid the image. The camera is fitted with rising and cross fronts, and is also provided with a focussing scale, which may be used if desired.



The camera is of thoroughly good workmanship and material throughout, and as it can be used either in the hand or on a stand, is well worth notice. Price, twelve guineas.

FALLOWFIELD'S P.O.P. MOUNTANT.

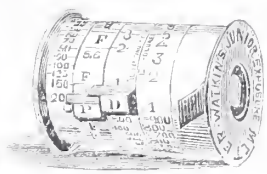
Jonathan Fallowfield, of 146, Charing Cross Road, has sent us a sample of this, which we have given a careful trial to, and find easy to use and a good sticker. The directions for mounting are:—Brush a sheet of paper over with an even coat of mountant, lay the print (quite dry) face upwards on pasted paper; over the print then place another piece of dry paper, and squeegee firmly over it. Strip the print from pasted paper, and apply to mount, again cover with dry paper and squeegee.



Using the mountant in this manner we have had no difficulty in mounting both glazed and matt-surface gelatino-chloride prints without any loss of surface. It is clean, easy, and cheap. Price 1s.

THE WATKINS JUNIOR EXPOSURE METER.

R. Field and Co., of 142, Suffolk Street, Birmingham, have sent us one of the above little instruments which they have introduced to meet the demand for a simpler instrument than their well-known and valued standard form. In this form we have only four scales and two movable pointers, the pendulum being also absent. The paper of actinometer is exposed to the light falling on the subject, and the pointer P set to the speed of the plate, and the D pointer to the diaphragm used, when opposite the actinometer number will be found the correct exposure for any average subject. For special subjects, on one end is a table of four special subjects which require modification of the exposure, viz.:—Sky, or sky and sea, 1-10th the indicated exposure; snow and glacier scenes, white or black and white objects, sea views with shipping, 1-4th the indicated exposure: light-coloured objects, open landscape (no foreground), half the indicated exposure; lake or water scenes, dark-coloured objects, as old oak, 1½ or twice the indicated exposure.



A very important improvement has been introduced in this new form of the Watkin meter, and that is providing the actinometer with a pale blue-coloured glass, which renders the matching of the tint of the actinometer far easier, without in any way altering its reliability. Testing this new against the old actinometer, we have found it give identical results, and it will be equally as useful. Price 7s. 6d.

THE HILL-NORRIS DRY COLLODION PLATE.

The Birmingham Dry Collodion Plate and Film Company, Limited, of Yardley Fields Laboratory, Stechford, Birmingham, have sent us samples of the above plates, which we have tested with good results, though we find them rather slower than gelatine plates. At present they are issued in two rapidities—the ordinary with green label, and the medium with yellow label. The following are the instructions for use, and using the pyro-soda we have got some negatives of great brilliancy and pluck:—

Development.—These plates while wet being soft and pappy like wet collodion, must not be touched or brushed during development. They may be put straight into the developer, *i.e.*, without previous wetting; the latter does not recede from the surface, as in the case of gelatine, neither do any air-bells attach themselves to the film.

Enough developer should be used in a suitable dish to keep the plate always well covered with the developing solution.

All the customary reducing agents, *e.g.*, iron, pyrogallol, hydroquinone, eikonogen, can be used, but ammonia is not so good an accelerating agent as the fixed alkalies, and the latter, inasmuch as they allow less exposure to be given, are therefore to be preferred. These plates can be built up with silver and pyro, after fixing, as in the old collodion process. The temperature of the developing room and solutions should not be below 60 deg. Fahr.

As a guide we append several formulæ for developing.

HYDROQUINONE POTASH.

No. 1.

Sodium sulphite...	...3,200 gr., or 7 oz., 137½ gr. (avoir.)
Potassium bromide	70 gr.
Potassium hydrate	1 oz. (avoir.)
Water	26 oz.

No. 2.

Hydroquinone	32 gr.
Sodium sulphite	160 „
Water	2 oz.

If tentative development is practised, the hydroquinone solution should be withheld in part for a time.

For half-plate take three drachms of No. 1 and half a drachm of No. 2, and fill up with water to two ounces.

HYDROQUINONE SODA.

No. 1.

Hydroquinone	160 gr.
Sodium sulphite...	2 oz.
Citric acid	60 gr.
Potassium bromide	40 „
Water	20 oz.

No. 2.

Sodium hydrate	160 gr.
Water	20 oz.

Mix equal parts and add an equal quantity of water.

PYRO-SODA (CARB.)

Sodium sulphite...	25 gr.
Sodium carbonate (not bicarbonate)...	25 „
Water	1 oz.

1 to 3 grains of dry pyrogallol to be added to each ounce of developer used.

If tentative development is practised, the pyro should be withheld in part, in preference to the alkali.

FERROUS OXALATE.

No. 1.

Potassium exalate	14 oz
Water	50 „

No. 2.

Protosulphate of iron	4½ oz.
Acid sulphuric	2 drops
Water	8 oz.

For half-plate take an ounce and a half of No. 1 and three drachms of No. 2.

FIXING SOLUTIONS.

No. 1.

Potassium cyanide	1 oz.
Water	10 oz.

Rinse well under tap.

No. 2.

Sodium hyposulphite	4 oz.
Water	20 „

If No. 2 is used more washing is required.

For those who admire the old collodion negatives, and they are many, and for more recent workers who desire fine-grained negatives which may be very quickly prepared, these plates may be recommended. Prices, quarter-plate medium, 2s. 3d.; ordinary, 2s.; half-plate medium, 4s. 6d.; ordinary, 4s.

Reviews.

Die Blitzlicht Photographie. Anleitung zum Photographiren bei Magnesiumlicht. By Hermann Schnauss. Published by Ed. Liesegang, Düsseldorf.

The author of this work, so well known as the author of "Photographic Pastimes," has given us a useful little handbook to photography with the aid of magnesium. After treating of the various methods of using the magnesium either as flash, explosive, or with continuous flames, full directions are given for successfully lighting the sitter, the taking of large groups, interiors, etc., the development of the negatives, and the other uses of magnesium, such as for contact printing, reducing, and enlarging.

The work is clearly written and is illustrated by numerous diagrams of lamps and examples of work.

Societies' Meetings.

Chichester.—On 15th inst. the members of this society gave an exhibition of their photographic work, including a large and interesting collection of lantern slides prepared by the members, which were exhibited by Mr. Futcher's biunial limelight lantern. The screen was prettily decorated with plants kindly lent by Mr. George Woodbridge, who presided. In an opening speech the President expressed his great pleasure at seeing so many present. This being a newly-formed society, he trusted the audience would not be too severe in their criticism. It was the intention of the society to repeat these evenings at intervals, and he hoped those who had come then would favour the society with their presence on future

occasions. Nearly all the members exhibited work of some kind, one end of the hall being converted quite into an art gallery. The lantern slides, which included both local and far distant views, were the work of the following members:—Dr. Paxton, Messrs. T. Vinall, R. Dawtrey, E. A. Long, E. Thorp, F. O. Collins, and G. N. Futcher.

Fairfield.—The ordinary monthly meeting was held on 11th inst. The President, Mr. Mallabar, was in the chair. The subjects for the evening's demonstration were "Metol-Hauff," and "Glycin-Hauff," by Mr. L. E. Morgan (representative of Messrs. Fuerst Bros., London). Mr. Morgan gave a most practical and interesting lecture, in the course of which he developed a plate, etc., most successfully. At the conclusion of the lecture a very hearty vote of thanks was accorded Mr. Morgan, to which he briefly replied. This concluded a very satisfactory meeting.

Hackney.—Weekly meeting held on 15th, Mr. T. H. Smith in the chair. Work of the members was shown. Mr. Vining asked what was the particular advantage with tabloids? The Hon. Sec. said they saved measuring and were convenient when away from home; but care must be used that they are thoroughly dissolved before use. Mr. Wire asked what caused yellow spots on amidol-developed bromide paper. Mr. Welford thought amidol itself was not the cause. From the question box: "Which is the best illuminant for printing in clouds on lantern-slides?" Mr. Beckett said gas was more regular. The Hon. Sec. agreed, and said gas was more under control and printing-in also. Mr. Perry said he had been troubled with yellow P.O.P. prints. Mr. Beckett said perhaps the first washing water did not carry off the silver, and doubtless the sulphocyanide was impure. Mr. W. L. Barker had recently tested the heat of water. In cistern exposed to sun it was 78 deg., and from main 63 deg. Mr. Welford then demonstrated his toning-bath. He claimed finality of tone and rapidity, and quite substantiated both of these. In the former it was demonstrated by toning half a print, then immersing the whole—no difference was apparent. The favourite bath was bicarb. soda, 1½ dram.; chloride of gold, 4 gr.; water, 6 oz. New paper has a great deal to do with rapidity. The Hon. Sec. asked for approximate keeping time of bath, and was informed not more than two hours. A diluted bath is slower but gives warmer tones, but finality is lost.

North Middlesex.—Ordinary meeting on 14th inst. This was a technical night, and the attendance was affected by the holiday season and also the tropical weather. An interesting talk was held as to the use of Amidol as a developer for bromide and Alpha papers. Mr. Gregory had tried it, and got good black tones with much shorter exposure than when using ferrous oxalate. He used the formula mentioned in *Photo Scraps* for July. Mr. Beadle had tried it too, and had succeeded also in getting good blacks with very little trouble, but could not get greys, which he rather wanted. Several other members related their experience, but the general opinion seemed to be that to keep Amidol under control fairly large quantities of bromide were necessary, and this so slowed the action that it became no faster in use than ferrous oxalate, and that, after all, the latter had not yet been ousted from premier position with regard to paper. One member had tried it with Alpha paper, but found he could on development only get a green-brown tone, which was no good for after-toning, a warm brown being necessary, but this he had not succeeded in getting. Mr. Beadle showed a series of prints, showing the result of partial reduction of his negatives, thus removing the effects of halation in interiors, or through trees, bringing out distance, which was over-dense and did not print through, etc. The difference of before and after treatment was most marked. He described his method as follows:—A solution of hypo of ordinary strength had an addition to it of a little strong solution of ferideyanide of potassium, just enough to give it a yellow colour; a small piece of sponge is dipped into this, and then squeegeed fairly dry, and the part of the *dry* negative to be reduced gently touched or rubbed with the sponge until sufficiently reduced. The next meeting is on the 28th inst., when the Sandell plate will be dealt with by Mr. Herbert Fry. Visitors are welcome.

Tunbridge Wells.—On the 16th inst. the members journeyed to Eridge Castle, the seat of the Marquis of Abergavenny, who had kindly granted permission for them to photograph the castle and grounds. The drive was delightful, being through a pine wood, which was beautifully cool and a marked contrast to the extraordinary heat in the open, Mr. Rust, the head-gardener, who takes a daily register, informing them that the thermometer had registered 92 in the shade. The castle stands on an eminence, and is considered the finest specimen of a modern castle in the kingdom, the estate having been in the possession of the family more than four hundred years. Cameras were speedily prepared for active work, several exposing their first plate in the dining-hall, a magnificent room, the carving of which attracted a great deal of attention, the coats of arms in the panels in their heraldic colours, with date and name of bearer. The full-length portraits also were much admired. One, the grandmother of the present Marquis, is taken wearing the necklace that Mary Queen of Scots had on when she stood in front of the block to be executed, who took it off her own neck just before she was beheaded and gave it to the Lord of Abergavenny of that time. There is also one of Richard Neville, Earl of Warwick, dated 1449: it should be mentioned that this is the family who were called the "king makers." There hangs on the wall one of Mary, daughter of Henry, Lord of Abergavenny, 1606, William Viscount Nevill in Life Guards uniform, and one of the present Marquis is another room, in the uniform of what appeared to be the West Kent Yeomanry, besides others very fine, but in so short a time it is impossible to give a faint idea of the treasures in such a house. There is a stained window in the upper part of the bay of the dining-hall, and a gallery runs the south end of it; in all the rooms the wood carving and internal decoration was conspicuous for its lavishness and good taste, and one would have to travel very far to find its equal. At the entrance the Viscountess Dangan's (Lady Violet Nevill) little son was taken on his horse, and though only two and a half years of age, seemed quite to understand the importance of the occasion, especially when a little boy of ten, the son of the Hon. Secretary, reared a camera for the purpose of taking his portrait. All conceivable views of the castle were taken, as well as views down at the lake. The deer in the park, of which there are herds of both red and fallow, were too shy for the camera, none being successful in getting near enough for a shot. Eridge was once a Royal chase of very considerable extent; the park contains now more than 2,000 acres, and green rides which are said to be seventy miles in length are cut in all directions. It is a lovely view from the castle, looking nearly south, the park, with the deer, sloping down to the lake and Saxonbury Hill rising up in the distance about 659 feet above the sea level, crowned with a tower sixty feet in height. The last plates to be exposed being a group of the members at the grand entrance to the castle, as a reminiscence of the visit. Full justice was done to the cooling beverages hospitably dispensed by Mr. Smith, who was specially thanked by Mr. E. R. Ashton, a Vice-president, for his kindness to the members during their visit. On the drive home the swarms of rabbits, amongst which were some black ones, caused much amusement by the way they scampered in all directions when the vehicles approached where they were partaking of their evening meal. Kind wishes were heartily expressed towards the noble Marquis for the enjoyable outing he had been the means of giving to the members.

SOCIETIES' FIXTURES.

Aug. 24—NORTHAMPTONSHIRE.—Excursion to Higham Ferrers and to Irchester.
„ 24—ASTON.—Mutual Criticism of Members' Work.
„ 24—HARRINGAY AND FINSBURY PARK.—Paper, "Photography: Interiors," by E. Milner, of London Stereoscopic Company.
„ 26—HUDDERSFIELD.—"A Naturalist's Ramble in Cornwall," illustrated with Lantern Slides, by H. G. Brierley.
„ 26—W. KENT.—Excursion to Westerham.
„ 26—BRISTOL (Camera Society).—Excursion to Portishead.
„ 26—S. LONDON.—Excursion to Leatherhead.
„ 26—OLDHAM.—Excursion to Oldham Wakes.
„ 26—LEYTONSTONE.—Excursion to Buckhurst Hill.
„ 26—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOC.—Excursion to Hatfield.
„ 26—FAIRFIELD (Camera Club).—Excursion to Speke.
„ 28—N. MIDDLESEX.—"The Sandell Plate," by Mr. S. Herbert Fry.
„ 29—BIRMINGHAM.—Lantern Night.
„ 30—PHOTOGRAPHIC CLUB.—"Mounts, Mountants, and Mounting."
„ 30—EASTBOURNE.—Excursion to Heathfield.
„ 31—NORTHAMPTONSHIRE.—Excursion to Cogralive Mill.
„ 31—ASTON NAT. HIS. SOC.—Micro and General.
Sept. 1—LEWISHAM.—Discussion on Photographic Dodging, opened by Mr. Shodart.
„ 2—BRISTOL CAMERA SOCIETY.—Excursion from Hotwells to Sea Mills.
„ 2—PHOTOGRAPHIC CLUB.—Excursion to Sutton, Surrey.
„ 2—WEST LONDON.—Excursion to Pinner.
„ 2—MANCHESTER.—Ramble to Lower Peyver.
„ 2—PAISLEY.—Excursion to Finlayston Policies.
„ 2—RICHMOND (Camera Club).—Excursion to Godstone.
„ 2—NORTHERN PHOTO. AND SCIENTIFIC ASSOC.—Excursion to Chingford.
„ 2—GOSPORT.—Excursion to Bosham.
„ 2—ROCHDALE.—Excursion to Middleton.
„ 2—BOLTON.—Excursion to Whalley and Mytton.
„ 2—LINCOLN.—Excursion to Torksey by steamer.

To Correspondents.

All communications for these columns are to be addressed to **The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.**

RULES.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES.

6152. **Pulp Slab.**—What is the reason prints won't come off Tylar's pulp slab? It is perfectly clean, and the prints quite dry. Is there any way of removing the almost infinitesimal scratchee that are on? They have ugly marks on the successfully stripped prints.—LEARNER.

6153. **Seascales.**—Should be glad of any information regarding Seascales, on the Cumberland coast. Are plates to be had there?—LEARNER.

6154. **Postal Club.**—Can anyone tell me of any good amateur photographic club that I could join, where a portfolio is sent round quarterly or half-yearly with the members' photographs, subjects being given, and one's photographs criticised by a professional or a thoroughly artistic and competent critic?—JINGO.

ANSWERS.

6138. **Buenos Ayres, etc.**—(1) I do not think there is a photographic materials agency in Rosario. In Buenos Ayres there are several photographic warehouses, the best assorted being perhaps that of Samuel Boote (English), 216 to 222, Calle Florida, where cameras, lenses, and materials by the leading English, French, and German firms are always kept in stock. Prices about 50 per cent. higher than the usual English catalogue prices. If P. F. G. is an amateur photographer he should apply to the *Sociedad Fotografica Argentina de Aficionados*, 141, Avenida de Mayo, where every assistance and the use of the society's dark-rooms, studio, library, etc., is offered to *confreres* from abroad, and the best materials may be obtained at lower prices that at dealers' shops. (2) Rosario is the most important town on the river Parana, 300 miles by water, and 190 by land (seven hours' journey by rail) from Buenos Ayres; population 80,000. The town is modern and well built, and has all the comforts of advanced civilisation.—PORTENO.

6141. **Alnmouth and Neighbourhood.** — In answer to the above, this district abounds in objects of interest and fine views. Alnwick and the Castle, Park, Hulme Abbey, Bamburgh Castle, Holy Island and pinnacles, St. Mary's Isle, Warkworth Castle and the Coquet, and heaps of other places. In fact, there is a good fortnight's work in this district, especially with trips to Tyne and Tweed, and had I time I would give a full account, having lived in this district, but the local guide to Northumberland will supply all necessary information.—CHOKER.

6148. **Hydroquinone.**—I always use Thomas's hydroquinone developer (two-solution) for bromide paper, with the addition of a small quantity water, say half an ounce to two ounces developer, with good results.—LEARNER.

QUERIES UNANSWERED.

June	2.—No. 6102.
,,	9.—Nos. 6106, 6108.
,,	16.—Nos. 6109, 6110, 6111, 6112, 6113.
,,	23.—Nos. 6115, 6116.
,,	30.—Nos. 6118, 6119, 6120, 6121, 6123.
July	7.—No. 6128.
,,	21.—Nos. 6131, 6133, 6134, 6135.
Aug.	4.—Nos. 6142, 6146, 6147.
,,	11.—Nos. 6150, 6152.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

JINGO.—We are afraid there is nothing quite what you want, although there are several postal clubs, but we insert as a query.

A. J. ADAMS.—B is, we think, the most satisfactory, but you must remember that the price is very low and not expect too much. Stock's lamp is certainly very good and superior to the ordinary lamps. With regard to the Vulcan lamp, we do not happen to know it, but the flame is certainly the wrong shape. We should advise you to stick to the Stock's; this we know to be good.

BOTANY BAY.—We have retained prints till we could make some criticism on them. It would be possible to photograph a rainbow, but it would be necessary to use an isochromatic plate and give a short exposure.

H. D. LINCOLN.—You do not give quite enough information to allow us to help you, but wash your prints thoroughly first, and then place them in the toning bath and fix them, and send us up an untoned, a toned, and a toned and fixed print, and then we can help you. But as soon as possible you had better begin to make your own solutions.

HAZEL.—The formula you want is

Pyro	1 oz.
Sodium sulphite	4 ,,
Citric acid	¼ ,,
Distilled water, to	9½ ,,

Dissolve the sulphite in the water by the aid of heat, add the citric acid, and when dissolved pour on the pyro, and bottle. This will give you a 10 per cent. solution.

Q.—(1) Negative rather too harsh, that is the whites too dense and shadows too black, otherwise good. (2) Good. (3) Ditto. (4) Decidedly pleasing, but you might have given a little foreground, and not cut off the boy's toes. (5) Fair. (6) An interesting old doorway, but we should have moved the man and the chair. (1) Try the following:—

A.

Hydroquinone	160 gr.
Bromide of potassium	30 ,,
Sodium sulphite	2 oz.
Water, to	20 ,,

B.

Sodium carbonate	2 oz.
Water, to	20 ,,

For use mix in equal parts. (2) Yes, all gelatino-chloride prints should be well washed before toning in any of the alkaline baths.

L. J. P.—The best form of lamp is Stock's (Rye) Patent. The centre of the flame should be opposite the centre of condenser. With regard to distance, you had better arrange it so that it is adjustable backwards and forwards, as only by this means will you get perfect illumination; the distance should be about half the focus of condenser

KROC.—(1) What do you mean by this query. Provided your dishes are clean you can use any developer after ferrous oxalate, but please write more fully. (2) The whole-plate portrait lens would be the best.

C. N.—We should advise you to get No. 3. We have used one all this summer and had no sign of fogging.

C. D. RICHARDSON.—You give no information as to exposure or development, but we should say that you are over-exposing enormously. Write and let us know exactly how you work.

C. W. BASSANO.—You can hardly avoid the spoiling of the bath. Wash your prints carefully before toning, and give them a bath of bicarbonate of soda 1 oz., water 20 oz., rinse and then tone. Filter your bath after use, and keep in the dark.

J. HACKING.—The only thing you can do is to use an isochromatic plate, backed with caramel and sienna, and give a long exposure in diffused, not sun light. A subject something like yours was tried with a special Sandell plate with good results.

J. K. SMITH.—We will write to firm, and let you know their answer.

T. W. NETTLESHIP.—We have been out of town, and through carelessness of a clerk your entry form was not sent on.

W. W. ROSS.—It sounds very much like grease. Can you send a negative for us to see before we state definitely?

E. P. VULLIAMY.—Send us up a negative or two to look at. The exposure with a telephoto lens would follow precisely the same rules as with an ordinary lens, viz., ceteris paribus, on the f/x ratio of the diaphragm, and to find that see note on p. 122.

G. G. DAVEY.—Negative rather under-exposed, hard too black and void of detail, and dress too white, otherwise all right.

FLUMUX.—Your letter was received too late for last week's issue. The fault you complain of is due to want of depth of focus in your lens, and can be cured by stopping down. You do not state whether it is a rectilinear or portrait, or what.

SNAP.—The appearance you complain of is due, we think, to small blisters due to the heat of the weather and your solution not being all the same temperature. Make up an acid fixing bath, and with hot water, and leave it in the open dish in the dark-room at least twenty-four hours before use so that it may get at about the same temperature as your developer. If this does not cure it you had better use the alum and hypo fixing bath. Write again if necessary.

J. H. BRAMWELL.—We will gladly let you have some prints, and we make an appeal also to our readers.

N. E. E.—From your description the lens and shutter you name is manufactured by a French firm, but any good English shutter manufacturer would put it right for you; try Perken, Son, and Reyment, Hatton Garden.

J. M. CAMPBELL.—(1) The ordinary limes measure 1½ by ¾ in., with 1-8th in. hole. (2) Limes are usually packed in dry slaked lime in self-closing tins, or in bottles.

V. MISSELBROOK.—We shall have an article dealing fully with the question next week. It all depends on what the yellow stains are caused by, but if an acid alum bath will not remove there is hardly anything else that will.

W. P. G.—By accidental omission on the part of a clerk in our absence the entry forms were not sent off. The lenses you name are of very high class, and fully up to the front rank.

J. W. H.—(1) You are probably using too much pyro or else developing too much. (2) If you write to R. Field and Co., Suffolk Street, Birmingham, they will send you a list of speeds. (3) No, we should give the same exposure under similar conditions. (4) We have no articles dealing extensively with the district named.

GILSLAND.—We still adhere to our opinion as to the cameras, and you will find they will have all the advantages.

R. H. MICHIE.—The films are considerably slower, so that no matter how long you developed, you could not get density.

E. C.—(1) Make up a 10 per cent. solution of hydroquinone in alcohol, and add that. (2) The best formula is—

Hot water	2 pints.
Carbonate of soda	½ lb.
Sulphite	¼ ,,
Hydroquinone	½ oz.
10 per cent. sol. potass bromide	2 ,,
Sat. sol. hyposulphite of soda	½ ,,

L. C.—It is as easy to enlarge from films as ordinary negatives, the best way being to place the film between two sheets of glass; a rough bromide paper is the best. (1) Too much uninteresting foreground, and print over-toned. (2) Slightly under-exposed, and wants clouds to break the sloping line. (3) Spoilt by over-toning and a little too much foreground. (4) Under-printed and over-toned. (5) Printed a little too deep, but otherwise good. (6) Wants clouds, but otherwise very good. The curious marking is due to the hinge of your dark slide, which lets in a little light and fogs the plate; have this seen to, it wants a new hinge. (7) Taken the wrong way of the plate, and rather over-toned.

H. F. LINGING.—The blue colour in your negatives is due to the formation of prussian blue, and the correct method of removing it would be by treatment with an alkali and then a weak acid, this treatment being founded upon a principle used in calico printing; unfortunately, however, we do not make our negatives on calico, and the same treatment does not answer. You might try a prolonged soaking in oxalic and hydrochloric acid, for instance—

Oxalic acid	1 oz.
Hydrochloric acid	1 dram.
Water	10 oz.

If this will not remove it, nothing will.

W. A. BROWN.—There are two points at which you might have erred, and your letter is so meagre that we cannot gather your exact method of working: either you did not allow the emulsion to ripen, or else you kept the plates too long, and did not use a preservative. Try the following—

Bromide of cadmium	200 gr.
Absolute alcohol	5 oz.

Allow to stand for twelve hours, decant and add pure hydrochloric acid, forty minims. This will keep indefinitely.

Chloro-bromide solution above	4 dram.
Absolute ether	9 ,,
Pyroxyline	12 gr.

Dissolve 40 gr. silver nitrate in 1 oz. of 820 alcohol by the aid of heat, add to above in dark room gradually with constant shaking. Allow to stand for twenty-four hours. Edge your plates, coat, and when set bathe in distilled water for five minutes, then into the preservative made of pyro 20 gr., stale bitter ale one pint. Write again if not successful.

HALF-PLATE MAHOGANY CAMERA, double extension bellows, rackwork adjustment, hinged focussing screen, reversing and swing back, double dark slide with ½-plate adapter, good condition, rare bargain, 22/6. Tripod Stand for ditto, 3/-. Half-plate Rapid Rectilinear Lens, 13/6. Camera Case, 3/-. Two Extra Double Backs, Brass Clamped, 5/9 each.—Capt. HOWARD, 43, Farringdon Road, London, E.C.

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 465. Vol. XVIII.] FRIDAY, SEPTEMBER 1, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

Our Views—Eder's "Handbuch;" our Translation; the Usefulness of the Work; its Scope and Contents—Our Annual Lantern-Slide Competition; Loans to Societies—Lord Rayleigh on Astronomical Photography—Photographs without Light—Nature's Mirror—The East London Exhibition.

The Month.

Flotsam and Jetsam. By Anchorite.

Letters—A Warning (Brooker)—P. S. G. B. Congress (Jones)—Stop Thief (Pitkethly)—Judging (Hall-Edwards).

Articles—Pictorial Photography (Wall)—To the World's Fair—Photographers' Efforts at Union (Ward)—Fine-line Screen Plates and their Use (Wolfe)—The Desirability of an International Bureau.

Holiday Resorts—The West Sussex Quadrilateral—Chenies and Latimer—A Fortnight on the Thames.

Societies' Meetings—Birmingham—Brixton and Clapham—Croydon Camera—East London—Hackney.

Illustrated Supplement.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

United Kingdom.....	Six Months,	5s. 6d.	Twelve Months,	10s. 10d.		
Postal Union	"	"	6s. 6d.	"	"	13s. 0d.
Out of Postal Union ..	"	"	7s. 9d.	"	"	15s. 8d.

TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 52, Hand-Camera Work. — Latest day, September 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, October 6th, 1893.)

It is with great pleasure we announce that in our issue for October 6th we shall print the first instalment of a translation of Vol. III. of Dr. Eder's famous "Handbuch der Photographie."

This work has now run through four editions in Germany, and it is without doubt the standard work on the use of gelatino-bromide and gelatino-chloride emulsions. Its usefulness to the general run of English photographers has been, of course, curtailed by the want of an English translation, and in presenting our readers with the same we shall give them yet another valuable work of reference.

It will be of great value to the manufacturing, the professional, and the amateur photographer, and we are sure will be welcomed heartily by all alike. It treats most thoroughly of the theoretical and scientific side, which forms the necessary basis for practical work, and lest some of our younger readers should be frightened we may assure them that the practical directions for every operation are so full and complete that even the veriest tyro will be able to learn much from its perusal.

Whilst thus sufficiently easy reading for the beginner, it will not be too elementary for the more advanced hand, for the author, Dr. J. M. Eder, the Director of the Imperial School of Photography and Photo-mechanical Processes at Vienna, has earned a world-wide reputation for the thoroughness of his writing. Not content to give merely his own method of working, he has gathered from every authority and photographic journal the processes which have been recommended by experimentalists, from the introduction of gelatine emulsions in 1871 by Dr. R. L. Maddox, down to the present time, so that the work forms a most valuable record of the progress of work during the last twenty years.

We cannot here enter fully into the details, but the work is divided into four parts, the first treating of the theories involved in the preparation of the various salts of silver, the preparation of emulsions, and orthochromatic photography. The second part is devoted to practical work, and is most complete. The third part forms in itself a complete treatise on gelatino-chloride printing, and the fourth is devoted to failures and their remedies.

As far as possible, we shall give an instalment each week, and as the work has been thoroughly revised and brought up to date, it should prove acceptable to all. Our publishers will

shortly make special announcements, but we must remind our readers that to secure a copy of the paper each week they should order it in advance, as having once printed our weekly edition we shall not reprint, and one missing copy may spoil the set for binding.

WE would remind our readers that our Annual Lantern-slide Competition closes the end of this month, and the following are the classes and prizes:

PRIZES:—Gold, silver, and bronze medals, and certificates in each class. Competitors may enter one or all classes; each set must consist of six slides, and a "lantern-slide portrait" of him or her self. Class 1—Landscape, with or without figures. Class 2—Sea pieces and river scenery. Class 3—Portraiture and figure studies, to include indoor or outdoor pictures. Class 4—Architecture, interior or exterior. Class 5—Instantaneous work. Champion Class—Any subjects, limited to past prize-winners. NOTE.—Every competitor



FIRST SILVER MEDAL. "A GOOD YIELD." *J. O. Arnold.*

"Photography at Home" Competition.

must send descriptive notes. Past prize-winners will be awarded "Niepce" or progressive medals, *should they win a medal of the same value as that which they have been awarded in past lantern slide competitions.* Past prize-winners of the gold medal are only allowed to compete in the Champion Class, but past winners of silver and bronze medals may compete in the Champion as well as the ordinary class. All slides must be received on or before September 30th, 1893.

CONDITIONS.—The prize slides are to become the property of the proprietors of the AMATEUR PHOTOGRAPHER, and will be available for loan to photographic societies and others on and after October 14th. Early application should be made for them. No slide that has been previously awarded a prize in the AMATEUR PHOTOGRAPHER Lantern Slide Competition, nor a slide from any negative a print from which has previously taken a prize, can be entered in this competition. The judges shall be at liberty to withhold any award should they think fit. The slides must have the title legibly written on the mount, and must be numbered in accordance with the particulars given on the entry form. The original negatives as well as the lantern slides must be the work of the competitor, who must be a *bona-fide* amateur photographer. Each set of slides must be accompanied with descriptive notes. The slides must be endorsed "Lantern Slide Competition," and sent to Editor, AMATEUR PHOTOGRAPHER, 1, Creed Lane, London, E.C.

THE prize slides will be shown at the Pall Mall Exhibition on Saturday, October 7th, and as soon as possible after that date they will be ready for loan to provincial societies. Application forms will be sent to all Hon. Secs. who forward a stamped and addressed envelope or wrapper, and in filling up the form alternate dates must be given, and if one or two days in the week are out of the question, these must be stated.

WE shall, as far as possible, limit the numbers of nights per week on which the slides are to be shown, and shall endeavour also to arrange that they may be shown in the same district as near together as can be, so as to avoid excessive carriage and fewer chances of disappointment. The slides will probably be shown in the northern counties first.

LAST season we were fortunate in having only one or two mishaps with the prize slides, and those were not our fault. We ask the Secretaries of all societies to help us as much as possible by applying early for them.

LORD RAYLEIGH, writing to *Nature* on "Astronomical Photography," and the proposal to raise a sum of £2,000 for the purpose of buying a photographic telescope for the Cambridge Observatory, says:—

"The announcement that it is in contemplation to raise a sum exceeding £2,000 for the establishment of a special photographic telescope at Cambridge Observatory, leads me to ask whether astronomers have duly considered the facilities afforded by modern photography. At the time of my early experience of the art, thirty-five years ago, it would have been thought a great feat to photograph the Fraunhofer lines in the yellow or red regions of the spectrum, although even then the statement so commonly made that chemical activity was limited to the blue and ultra-blue rays was quite unwarranted. With the earlier photographic processes the distinction was necessary between telescopes to be used with the eye or for photography. In the former case the focal length had to be a minimum for the yellow rays, in the latter for the blue rays of the spectrum.

"But the situation is entirely changed. There is now no difficulty in preparing plates sensitive to all parts of the spectrum; witness the beautiful photographs of Rowland and Higgs. I have myself used 'orthochromatic' plates in experiments when it was desirable to work with the same rays as most influence the eye. The interference bands of sodium light may be photographed with the utmost facility on plates sensitised in a bath containing cyanin.

"The question that I wish to ask is whether the time has not come to accommodate the photographic plates to the telescopes, rather than the telescopes to the plates. It is possible that plates already in the market may not exactly meet the requirements of the case, but I feel sure that a tithe of the sums lavished upon instruments would put us in possession of plates suitable for object glasses that have been designed for visual purposes. There would be no difficulty even in studying the requirements of a particular instrument, over or under corrected as the case might be.

"A doubt may arise whether plates so adjusted would be as sensitive as those now in use. Probably Captain Abney, or some other authority, could give the required information. For some astronomical purposes a moderate loss of sensitiveness could hardly be of much consequence; for others doubtless it would be a serious matter."

THIS is a question which has no little interest to many. There are plenty of two or three inch telescopes about, which are not corrected for photography, and if we can, and there is not the slightest doubt of it, correct our plates, then we may save expense and open the field for a lot of interesting work.

CAPTAIN COLSON has stated that it is possible to obtain a print from a bronze coin by moistening a piece of albumenised paper and placing a coin on it. A reduction of silver takes place, and in a few minutes an impression is obtained which can

be toned and fixed. We have not yet tried this, but we can vouch for brass or metal marking chloride paper, and a very bad mark it gives too.

A correspondent sends us a print on chloride paper, which he calls "Nature's Mirror," which is certainly the very finest example of reflection in water we have ever seen, the image in the water being absolutely as perfect as the object itself.

The East London Photographic Society will hold their annual exhibition at the New Tabernacle, Old Street, E.C., on Monday and Tuesday, October 30th and 31st. Anxious to avoid any chance of what has been called playing to the judges, the committee have placed in our hands the task of finding two judges, whose names will not be announced till after the entries close on October 10th. Full particulars are given elsewhere.

Our readers are requested to note that to ensure replies or insertion the same week, letters must reach us before noon on Tuesday; after this time we cannot guarantee that anything received will be inserted.

The Month.

The Use of Spectacle Lenses.

Eder has a useful article on the above topic, in which he states that the ordinary crown-glass spectacle lenses have their chemical focus 1-50th within the visual when working at their equivalent focus. He gives the following tables for the corrections for different distances:—

Steinheil's table.

I.	II.	I.	II.	I.	II.
a	Δ	a	Δ	a	Δ
100	1·020	9	1·26	2·7	2·45
90	1·022	8	1·30	2·6	2·56
80	1·025	7	1·35	2·5	2·69
70	1·029	6	1·43	2·4	2 84
60	1·034	5	1·54	2 3	3·01
50	1 040	4	1·75	2·2	3·23
40	1·051	3·5	1·92	2·1	3·49
30	1·069	3·0	2·20	2·0	3·81
20	1·102	2·9	2·23		
10	1·230	2·8	2·35		

In column I., a are the distances of objects expressed in units of the focus; in column II., Δ is the difference between visual and chemical foci, by which numbers the focus must be multiplied. Example: It is desired to photograph a sitter with a spectacle or monocle lens of 15 in. focus, the distance between sitter and camera being 7 ft. 6 in.

7 ft. 6 in. = 90 in.

$\therefore$ 90 ÷ 15 = 6.

Now we know that the difference at the equivalent foci is 1-50; then 1-50th of 15 = ·3 in.

Against 6, in column a, we find 1·43, therefore we multiply ·3 by 1·43 = ·429 in., or practically half an inch.

Another table by Dehors and Deslandres is also given, but as this is identical with one already given last year, we do not repeat.—*Photo. Corresp.*, Aug., p. 386.

Printing with Tin Salts.

R. E. Liesegang says it is worth noting that some tin compounds are not reduced but oxidised by light, for well sized paper soaked in an aqueous solution of bromide of tin dried in the dark and exposed under a negative for ten minutes in direct sunlight shows no change, but if it is laid in an aqueous solution of nitrate of silver, the unexposed parts turn a deep brown, and a negative is obtained. Chloride of gold gave "purple of cassius" images, but the whites were not pure; with a molybdate a blue negative on a white ground was obtained. Additions of formic and lactic acids to the tin bromide increase the intensity of the reduced silver and the whites remain pure. Arseniate of soda acts more powerfully still. Oxalic acid and sodium oxalate destroy the light sensitiveness; sodium carbonate has no action. With the lactic acid and tin bromide paper developed with silver nitrate, a reddish-brown image is obtained; with one per cent. gold chloride solution, a violet image; with potassium chloroplatinite, a black; with sodium palladiochloride, a greyish-black. A solution of tin hydrate in formic, lactic, acetic, and other organic acids spread on paper were also sensitive to light. Tin chloride or mixture of the same with organic acids or an alkaline carbonate was insensitive.—*Photo. Archiv.*, Aug. 16th, p. 243.

Photographing the Retina.

M. Londe summarises the attempts of previous experimenters, and then describes the apparatus and method of procedure of M. Guilloz, and gives a diagram of the same, and a reproduction of a retina thus photographed. Magnesium is used as the light source, but the article cannot be usefully condensed.—*Bull. Soc. Franc.*, August 15th, p. 389.

Ammonium Hyposulphite as a Fixing Agent.

M. Hermitte points out that the solution of this hyposulphite which has been lately revived as a fixing agent, continually gives off ammoniacal vapours which are exceedingly unpleasant, and this may be avoided by the addition of a little chlorate of potash, the formula suggested being

Water	1,000 parts
Ammonium hyposulphite	150 „
Potassium chlorate	10 „

—*Revue Suisse.*

Aqueous Shellac Varnish.

Valenta reports on a commercial sample of the above, in which a still damp negative is immersed and then dried, and states that a similar preparation may be made by boiling 80 parts of white shellac with 20 parts of borax in 1,000 parts of water till dissolved, and filtering whilst warm. This formula is by no means new, but Valenta states that it is very effective, especially for films, and takes the retouching pencil well.—*Photo. Corresp.*, Aug., p. 394.

Metol and Hydroquinone Developer.

Spaulden especially recommends the following as a developer on account of the command over and beauty of results:—

No. 1.	
Metol	2 parts
Sodium sulphite	20 „
Distilled water	200 „
No. 2.	
Hydroquinone	4 parts
Sodium sulphite	25 „
Distilled water	200 „
Potassium bromide	0·25 parts
No. 3.	
Potassium carbonate	20 parts
Distilled water	200 „

For normal exposure use solution 1, one part; solution 2, three parts; water, one part; solution 3, half to one part, with a few drops of 10 per cent. bromide. For over-exposure reduce solutions 1 and 3, and increase water and bromide. For short exposures take solution 1, one part; solution 2, two parts; solution 3, three parts. For very quick work, solution 1, two parts; solution 2, one part; solution 3, three parts.—*Photo. Mittheil.*, Aug. 1, p. 131.

Celloidin or Collodio-Chloride Paper.

Vogel, in an editorial on above, says that a good celloidin paper should not roll up very much in toning bath, nor take too

long in toning, nor the prints be too hard. Too long toning causes the half-tones and finer details to become grey whilst the shadows keep warm. Lead salts in the toning and fixing bath merely cause more rapid toning. The following are good baths:—

	I.	II.	III.
Water	1,000	1,000	1,000
Hypo	250	180	250
Sulphocyanide of ammonium...	28	24	30
Lead acetate	10	—	—
,, Nitrate	10	10	12
Citric acid	8	—	—
Alum	8	20	—
1 per cent. gold solution ...	40	100	100

—*Photo. Mittheil.*, Aug. 1st, p. 129.

TONING AND FIXING BATHS.

R. E. Liesegang comments on above, and states that when alum and citric acid are used, using too soon after mixing is liable to cause sulphur toning. He tried Salzer's idea of adding sodium arseniate to the bath, on the plea of its preventing the separation of sulphur, but Liesegang states he found no benefit, and the arseniate is very poisonous. Orlowsky stated that metallic copper had a greater affinity for sulphur than silver, but this is impracticable, because the copper reduces the gold. Liesegang strongly recommends the use of aluminium sulphocyanide in place of the potassium and ammonium salts, because the gelatine is hardened and toning not delayed at the same time. He suggests mixing 18 parts of aluminium sulphocyanide of 18 deg. Bé with 75 parts water and 8 parts of 1 per cent. solution of chloride of gold. The well-washed chloride prints assume a pleasing blue-black tone in from 5 to 10 minutes.—*Photo. Archiv.*, Aug. 16th, p. 241.

TONING COLLODIO-CHLORIDE PAPER.

Gaedicke states that all collodio-chloride papers require weaker toning baths than albumen prints, and specially commends the following process:—Wash the prints well in salt and water, rinse, and tone in

Borax solution, 1 per cent.	1,000 parts.
Gold solution, 1 per cent.	20 to 30 ,,

Fix in hypo 1 : 15. Toning should not be carried too far, as the prints turn bluer when dry.—*Photo. Mittheil.*, Aug. 1st, p. 132.

TONING GELATINO-CHLORIDE PAPERS.

Balagny suggests the following method of working this paper, as preserving all the half-tones of the paper and occasioning no loss of detail. Print to exactly the same depth as with albumenised paper, immerse the prints without previous washing in

Water	1,000 parts.
Powdered alum	50 ,,

for fifteen minutes, then wash well (running water being best) till all trace of cloudiness disappears, then tone in

Sodium acetate	30 parts.
Boiling water	700 ,,

to which add

Solution of chloride of gold (1 : 60)	300 parts.

This may be used immediately it is cold. When the desired tone is reached, place in

Hypo	100 parts.
Water	1,000 ,,

wash well and dry.—*Paris Photographe*, July, p. 289.

Flotsam and Jetsam.

MESSRS. W. H. WHITE AND CO. have just published a charming book of over 200 pages, which shows what photography may do to help literature. There is attractiveness, as well as alliteration, in its very title, "Through Canada with a Kodak." The author is Lady Aberdeen, and she has done her work charmingly.

As a matter of fact, it was not work, but pleasure, for the book consists chiefly of "recollections of delightful holiday trips," illustrated "with the little scraps of sketches and photographic views so dear to the heart of the tourist." A very fair and complete picture of the superficial aspects of Canadian life is, however, presented, and one which will be greatly relished by those who need something more in the way of recreation than the "blue-book and biscuit" Lord Rosebery has told us of.

ADDITIONAL interest is given to the almost innumerable illustrations by the fact that very many of them are reproduced from photographs taken by the Countess herself with a Kodak. Railway cars, grinning groups of emigrants, colonial buildings, horse ranches, views in the Rockies and on the prairies, *et hoc genus omne*, all was fish that came to my lady's net, and it was well caught too.

PHOTOGRAPHY has now discovered to what depth in the water it can count upon the sun's rays for help. It was easily and simply done too. Sensitised plates were sunk and exposed at various depths, and it was found that at a depth of 553 feet the light lost all its power, its intensity then being about equal to that on a clear but moonless night.

NOT content with the mischief that cannon balls and other such projectiles do, the men of science must needs now know all about the rate at which they travel, and the extent of their oscillation. Some sufficiently marvellous figures on the former point have already appeared in this column, but it has been reserved for a Professor Neesen, of Berlin, to get "a photographic record of the oscillation of projectiles."

THE projectiles were hollow, and inside them sensitive plates were placed, so that a ray of light might penetrate to them. This ray of light, it was found, described a curve on the plate, and so enabled the inquisitive experimenter to calculate the oscillation of not only the axis but the point of the missile. Remarkably ingenious, no doubt, but what's the use of it?

IN the second series of the admirable "Selections from Ruskin," which Mr. George Allen published not so very many weeks back, there are some very interesting references to photography by "the Master," from which, it seems to us, much may be learned. The first occurs in an excerpt from "The Laws of Fesoli," where the great general principle is laid down that "all true art is praise."

THE definition seems not so very definite at first, but it is developed and clarified by such passages as these:—"Be you small or great, what healthy art is possible to you must be the expression of your true delight in a real thing, better than the art." . . . "As soon as the artist forgets his function of praise in that of imitation, his art is lost. His business is to give, by any means, however imperfect, the idea of a beautiful thing; not, by any means, however perfect, the realisation of an ugly one."

THEN comes the reference to the camera. "It is because a photograph cannot condemn itself that it is worthless. The glory of a great picture is in its shame; and the charm of it, in speaking the pleasure of a great heart, that there is something better than picture." The point of the allusion to the photograph is clearly that it is produced by partly mechanical means.

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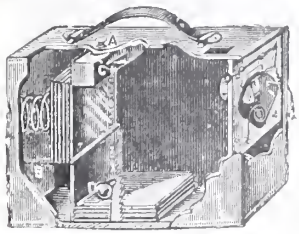
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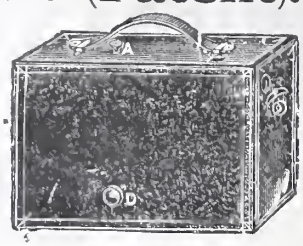


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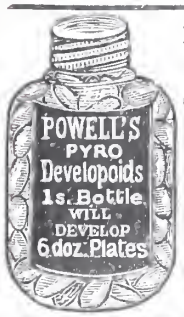
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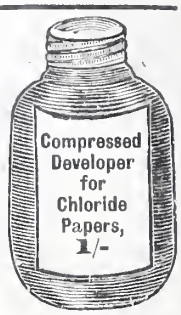


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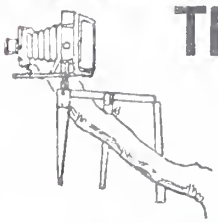
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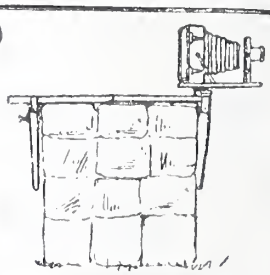


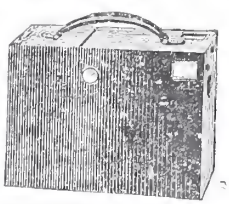
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THOMAS

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But photography at the time when those sentences were penned was quite another thing from what it is now, and no one can deny the student of artistic photography the right to attempt to give "by any means, however imperfect, the idea of a beautiful thing." To that extent photography may be art, and photographs are, not worthless, but worthy. There are other references, but they must wait. Anchorite.

Letters to the Editor.

A WARNING.

Sir,—With reference to the letter from Mr. W. R. Gould warning exhibitors from trusting their pictures to irresponsible persons, I beg to state the following facts:—

When exhibiting at the Stanley Show (season 189?) I received a notification from the secretary that two of my slides had been stolen, and that on hearing the value from me the amount would be remitted. Intending to hand the amount to the Photographers' Benevolent Association, and knowing from experience the great expense of producing slides fit for competition, I replied that I would accept 10s. 6d. each.

The following clause is copied from the entry form:—"The committee do not hold themselves responsible for any damage that may happen to the exhibits whilst in their custody, but every precaution will be taken to ensure their safety and prompt return."

Now, if I understand plain English, *damage* does not mean *loss*, whether from theft or any other cause, but, with regard to lantern slides, refers to the perfectly reasonable risk of breaking by dropping, or from heat of the lantern.

From a friend who visited the Stanley Show I learnt that the ends of the frames were not fastened in any way, and he was not surprised that some should have been lost. I mentioned this in writing, and this was the reply of the honorary secretary:—

"With regard to the remark of your friend, it is rather a coincidence he should have been there at that time, as the slides were only left unattended in that state for a short time whilst I went for some screws to protect the ends of the screens, and it was during that period the slides were abstracted," etc.

I felt that these remarks were adding a scarcely veiled insult to the injury, and applied for the names of the gentlemen forming the committee, which were not stated on the prospectus, but my request was entirely ignored, although constant reference was made to his committee by the Hon. Secretary.

The responsibility for the loss was all through denied and an offer of 2s. 6d. each made as an act of grace, and afterwards an offer was made me that persons should be appointed to assess the value of the slides, which appeared to me entirely useless whilst the committee persisted in denying their responsibility.

The moral seems to be, avoid commercial exhibitions and, above all, see that the names of responsible gentlemen forming the committee are published on the prospectus. Then you will not suffer the annoyance of finding that you have paid entry fees, and entrusted your exhibits, to an anonymous body of men, who deny ordinary legal responsibility.—I am, etc., Algn. Brooker.

Hastings.

* * * *

THE P. S. G. B. CONGRESS.

Sir,—I shall be glad if you will allow me to reply publicly to the enquiries that are being made concerning the Congress of the Photographic Society and Affiliated Societies.

It is finally arranged that this Congress shall be held on the 10th, 11th, and 12th of October. In a few days all the arrangements will be completed, and a full programme will be circulated as soon as possible after that.

We shall be happy to send a copy of this programme to any one who, not being a member of this Society or of one of the affiliated societies, sends a postcard request for it to 50, Great Russell Street, Bloomsbury, W.C.—I am, etc., Chapman Jones,

50, Great Russell Street, W.C. Hon. Sec., P.S.G.B.

* * * *

STOP THIEF!

Sir,—By the way of warning to your readers, perhaps you will give publicity to the following, which appears to be a case of barefaced theft. A member of the Leith Amateur Photographic Association was called upon a week ago by an individual, who stated that he had learned my friend had some apparatus for disposal. (Where he got his information has not yet been ascertained, but it did so happen that my friend and our member had some surplus apparatus to dispose of.) He introduced himself as an amateur from Newcastle, and, among other things, was shown a quarter-plate hand-camera, by Hume, of Edinburgh.

After examining the various articles, and *evidently* finding nothing to suit his requirements, he took his leave, but he was not long gone ere my friend discovered that he had helped himself to the lens from the hand-camera.

This, no doubt, was accomplished while my friend was looking out other odds and ends for his inspection.

The individual in question is said to be about thirty-five years of age, of reddish complexion, dressed in dark tweed, and wearing a wide-awake hat.

Your inserting this may make your readers *wide awake* to such a caller, as no doubt, having succeeded here, he will venture again in "fresh fields and pastures new."—I am, etc.

Alex. Pitkethly (Hon. Sec.).

* * * *

JUDGING.

Sir,—Recent discussion in the photographic press concerning the methods of judging in competitions in which a set of pictures are sent in, has led the committee of the Midland Camera Club to reconsider the subject. They have decided that at the forthcoming exhibition all classes in which sets compete shall be judged on the following lines:—The first place will be gained by the best set, taken as a whole. The medal will be awarded to the best picture in the set. By this arrangement only one negative will be debarred from future competitions, and although the prize may not be awarded to the best picture in the competition, it will go to the best all-round man. The system now in vogue, where all pictures of a set are for all intents and purposes medalled, undoubtedly acts in a detrimental manner. Good pictures cannot be seen too often, and we should do nothing to hinder their exhibition. I should like to hear the opinions of your readers upon this important subject.—Yours faithfully, Hall-Edwards, L.R.C.P.

(President of the Midland Camera Club).

Pictorial Photography; its Principles and Practice.

By A. H. Wall.

CHAPTER III.—THE COMPOSITION OF LINES.

The artist painter's outlines are veritable lines, but in his finished paintings they cease to appear as actual lines and become the boundaries of vision. There are, as one need hardly say, no outlines in Nature, and there are none in a photograph. But the fact that the sight travels to and fro, up and down, out of and into a picture, along these boundaries of vision, makes them lines in effect, although not in reality. They may be formed in many ways. By a band of light, such as a line of hills, the curves of a river, a wall, hedgerows, posts and rails, a flock of sheep, or a piece of pale drapery, or an outstretched limb, or trunks and boughs of trees, or tables, chairs, doors, windows, or many other things far too numerous for enumeration. In this way lines abound in pictures of every kind—curved flowing lines, abrupt angular lines, parallel lines, prominent staring loud lines, and quiet lines that modestly retire and are not seen until they are looked for. They are all valuable aids to pictorial composition, or they are dangerous enemies to it, according as you adopt or conceal them, introduce them in this way or that, govern or are governed by them. You have great power over all such things, if you only know how to use it. But they have great power too. By repetition, by prominence, by dominant tones, and in various other ways they may spoil your best effects utterly. And yet a change from one hour to another, a movement of the camera by altering their perspective, by concealment of parts, or throwing this or that out of strong light into deep shadow, may entirely change their aspect. By sheer dominance of repetition or by their inextricable confusion and equality of prominence they will often weary and perplex the eye and keep it from recognising

the main idea or elements of superior importance, just as harsh, out-of-tune jangling will drown the most carefully arranged notes of a musical composition, or a note out of tune will spoil the most finished harmony, or just as the lines of a building will through want of composition make that ugly which through composition they would have made beautiful. The principle is the same throughout art in all its varied applications. The uses of lines are as fairly within the province of the art photographer's studies as within those of the sculptor, painter, or decorator. In like way are they valuable. They help you to give your ideas force, they can be made to call up feelings and sentiments in harmony with the general idea and purpose of your production. The mighty energy and sublime grandeur of Michael Angelo's figures and groups are splendid illustrations of the value lines have in works of art. "The Sistine Chapel," says H. Howard (R.A.), "is an inexhaustible mine of study for the artist in this respect. His 'Temptation of Adam and Eve' is (combined with 'The Expulsion from Eden') in a vigorous and masterly style of composition, which had never been seen before his time. In this the concatenation of lines formed by the arms of the different figures is beautiful." The same able artist and lecturer on Art says of Raffaelle's compositions as "often so artless in appearance that they look as if he had found them in nature, and sketched them on the spot. . . . His 'Deluge' is finely conceived and treated—the main line of figures crosses the canvas in a kind of chain." Speaking of that well-known work by Rubens, in Antwerp Cathedral, "The Taking Down from the Cross" (always admired as a piece of scientific composition), he says, "The lines flow diagonally through the picture from top to bottom, that of the principal figure being the longest, which is still farther extended by the linen in which it is wrapped, carried out by the half figure at top, and combined with the kneeling Magdalene below. This main serpentine line, which illustrates M. Angelo's axiom, is supported on one side by the large masses of St. John and the figure descending the ladder; on the other side, smaller portions of figures, finely varied, oppose the central stream of form, presenting altogether a beautiful example of concatenation, full of intricacy but simple, and One." You could not take away a line from this composition without weakening it. The eye goes perforce to the central figure of Christ, as the artist intended it should, every line from every quarter has there its focus, the eye cannot escape it. Lines that would have taken your attention from the central figure are broken with light and shade, or lost in gloom, while all the more important lines have full prominence given to them, but each in its degree. Nearly every great work of art will supply forcible illustrations of the importance of lines as elements of pictorial composition. I have seen a landscape converted from a dull, flat, uninteresting sort of map into a deeply interesting picture by the introduction of a few figures with one outstretched arm and pointing finger leading the eye to that part which was most suggestive of thoughts that appealed to feelings. It was the only way in which that part of the painter's subject could be made prominent, and it served its purpose fully. One light line, the arm running to a less prominent point, with a mass of dark to emphasis it, sufficed to make the striking difference there is between a map and a picture.

One of the best and most practical of all our art student teachers, P. H. Hamerton (author of "Thoughts about Art," etc.), has told us that Turner's early career was commenced in an architect's office. There the value of lines must have been strongly impressed upon him, and in no landscape painter's work will you find more instructive examples of linear composition. The same author says, "There is an almost universal illusion that landscape painting is comparatively easy, an illusion which is based upon the truth that accurate drawing is not essential to a landscape painter. There are, however, other qualities than mere accuracy in good landscape painting, and other difficulties in the representation of nature than a simple definition of its forms. The greatest difficulty in this part of art may be expressed in a single word—complexity. The complexity of natural landscape is such that it cannot be understood and, therefore, cannot be interpreted, without powers both of analysis and of synthesis, which a young student is not likely to have acquired. . . . In a climate so changeable as that of England, not only do effects change from hour to hour, and in distant scenery from minute to minute, but there is never any probability that if you go to a place on three successive days, exactly at the same moment, you will find your first effect again. Everyone knows how entirely different a place looks at different times. . . . To the mature and accomplished artist, this changeableness of nature is an additional source of interest."

I have quoted this passage to show you the camera man must depend upon intelligent and artistic observation for his composition, although he has really excellent opportunities of exercising his practical art knowledge by actual introduction of elements not supplied by nature or chance. But knowing and seeing are so intimately associated, that he only sees what he ought to see, who knows how to recognise it when he can see it.

Another famous landscape painter, J. B. Pyne, in his splendidly practical "Letters on Landscape," advising a pupil then studying landscape-painting in like way, says, "In addressing yourself to Nature, it will necessarily more often be upon bended knee than *en garde*. She is not to be conquered but by the steadiest devotion, which becomes the rapid and spontaneous growth of the pursuit; so that there is an equal danger of becoming her faithful though menial slave, as there is the chance, the glorious chance, of standing erect as her liberal translator. . . . You absolutely must confine yourself at setting out to the study of outline. You must take the term 'outline' in its most extended and liberal sense, not as merely indicative of that manner of drawing which consists only of surrounding the forms of Nature with a line, but, as I have already shown, as indicating everything that takes possession of the spectator's eye, and carries it here or there at its own sweet will." Dwelling from another viewpoint upon the expressiveness of outline, the same writer says: "The rounding off of a piece of country, a mountain, for instance—with all its variously-directed faces, its dimples, or larger hollows, and risings and depressings, its bare brows and wood-matted sides, its ravines, scars, and crags, with its many-buttressed and firm seats in the lap of its own valley, up the sunny miles of which its sides may be traced—is not a thing to be represented as a screen with a hard edge, and is much more dependent upon judiciously-composed detail, and the frequency and infrequency of outline, than upon either light and shade or colour. To instance one feature out of many, by way of illustration, take a deep hollow or depression in the side of a mountain wood. I choose this incident as its features are composed of objects of one character, size, and form generally. There will, of course, be on the nearest side of the hollow, a point, or rather a limit, which will form a defined outline against its opposite side. On approaching this outline the tree-tops will gradually become more frequent until they double on each other, and ultimately become involved in one outline with the lower and farther forms, so filling up the intervals between the next nearest that all indentation and undulation will be lost, presenting nothing more than a nearly even line, though not a sharp or well-defined one; while the nearest trees on the opposite side will come out in the full integrity of their forms and dimensions, sudden and distinct." Here we have just such an illustration of our subject as the photographer requires, and a better subject lesson, so far as landscape goes in connection with linear composition, it would be difficult to hit upon.

(*To be continued.*)

MONTHLY PRINT COMPETITION.

NO. 51.—SEASCAPE AND RIVER SCENERY.

CLASS I.

PATTERSON, J. G. (Eskbank).—"Fast Falls the Eventide." Wray's R.R., *f*/32; 4 sec., July, diffused light, 5 p.m.; Castle plate; Whatman's home-sensitised paper, platinum toned. A whole-plate print of very fine work.

EDWARDS, G. (Hereford).—"The Vale of the Lugg." Single landscape, *f*/22; 1 sec., July, diffused light, 3 p.m.; Thomas' E. R. One of the most charming little luminous bits from a half-plate on chloride paper we have ever seen, though the water is a little too white.

FORMAN, E. H. (Louth).—"Sunset and Eventide." Single lens, *f*/22; 2 sec., June, 6.30 p.m.; Castle; chloride paper. A half-plate print for which we congratulate the competitor, but the water is certainly too white for the sky.

EDWARDS, A. E. (Blackhill).—"On the Lyn." R.R., *f*/32; five seconds, May, light fairly good, 11 a.m.; combined.

HIELD, J. H. (London).—"Below London Bridge." Wray, *f*/11; 1-50th of a sec., August, diffused, 3p.m.; platinum.

PITTSTUCKER, C. H. (Barnstaple).—"On the river Jaw." R.R., *f*/16; ½ sec., June, bright, 8 a.m.; sulphocyanide.

SNOWBALL, G. (Newcastle).—"On the Alne." R.R., *f*/22; ½ sec., July, light good, 3 p.m.; Castle; platinum, cold bath.

SMALLPIECE, M. (Windermere).—"Through the Meadow." R.R., *f*/32; five sec., August, diffused, 6 p.m.; combined.

DOCKREE, E. (Herne Hill).—"On the Colne." R.R., *f*/16; two sec., August, dull and heavy, 2 p.m.; Obernetter.

The above six pictures were classed next to the prize ones.

WATERS, J. (Keighley).—A very fine effect and highly commended.

(NO NAME).—"The Narrows, Wisconsin River." An exquisite bit of work, and well to the front.



SILVER MEDAL. "Fast Falls the Eventide." *J. G. Patterson.*

CLARKSON, E. V. (Lawrence, New York).—"Moonlight on the Racquette." Beck instantaneous; September, overcast, sunset. A really good effect, although a bit of trickery.

NICHOLLS, A. C. (Cheltenham).—"The Llugwy in Flood." Zeiss, *f*/18; 1-5th sec., bright, 12 a.m., August. Highly commended by the judges, but too flat.

ROBBINS, R. C. (Seacombe).—"On the Lledr, N. Wales." R.R., *f*/22; 2 sec., May, brilliant, 1 p.m. Printed a little too deep, and the line of the hills is repeated in the clouds.

SHAW, J. (Kirknewton).—"Water of Leith." Lancaster's, *f*/10; 2 sec., July, good light, 6 p.m.; cold-bath platinotype. A lovely little bit, well to the front.

NETTLESHIP, T. W. (Bawtry).—"Meeting of the Waters." R.R., *f*/32; 2 sec., May, bright, 2 p.m. Clouds not deep enough, and the tops of trees should be more distinct.

WILSON, T. E. C. (Liverpool).—"The Sun is Sinking Fast, the Daylight Dies." R.R., *f*/8; 1-15th sec., July, bright, 8 p.m.; sulphocyanide ammonia. A very pleasing effect.

BURROWS, M. F. (Atherton).—"The River Mawddach, near Barmouth." Beck's, *f*/64; 35 sec., June, good light, 10 a.m.; platinotype. Very fine effect, although the lower corners are cut off.

MAITLAND, VISCOUNT (Lauder).—"On the Arun River." R.R., *f*/14; ¼ sec, May, cloudy, dull, 2 p.m.; cold bath. A very good thing spoilt by over-printing.

TODD, A. (Glasgow).—"Kyles of Bute." 3 sec., 3 p.m.; sulphocyanide and gold bath. A good picture spoilt by over-printing.

CARREVALI, J. H. (Liverpool).—"On the Lledr," N. Wales." R.R., *f*/36; May, 11 a.m., rather cloudy. A very fine effect, but a little yellow varnish on the distance, so as to keep it back, would improve it.

RIDLER, W. (Manchester).—"On the Tame." Lancaster, *f*/16; 1½ sec., March, bright, 3 p.m.; combined. A good study of leafless trees.

BULLOCK, W. (Glasgow).—"On the River Dochart." R.R., *f*/15·6; 6 sec., July, 7 p.m.; matt chloride. An exquisite little bit and well to the front.

WEBLING, A. H. (Brighton).—"Evening in the Harbour." R.R., 1-10th sec., *f*/16, May. This is a striking, bold effect, but we don't like the paper.

DOWDALL, A., Lieut.-Col. (Chester).—"Brampford Speke." R.R., *f*/11; ¼ sec., October, 1892, sunshine, 11 a.m. Good, though a little too flat.

HILL, J. (Bristol).—"Eidford, Norway." R.R.; 22 sec., August, 1892, fair, 12 p.m., cold. Too much foreground, but a fine little bit.

PUCKLE, B. (London).—"Beside Still Waters." Lancaster's, *f*/16; 2 sec., July, strong glare, 4 p.m.; combined. An exquisite little bit, but it is questionable whether the vignetting has improved it, and it has too much foreground.

POST, W. B. (New York).—"Stormy Waters." Ross's, *f*/32; instantaneous, May, fairly good afternoon; oxalate. A very good effect.

BLANCARD, SURGEON-CAPT. (India).—"A Hill Torrent." Lancaster's, *f*/10; ½ sec., April, diffuse, 2 p.m.; uranium nitrate. A very nice little bit, notwithstanding the tinged whites.

CLASS II.

STANBURY, H. J. (Exeter).—"River Mole." This is a little too muddly, but could be improved.

PAYNE, A. H. (Brockley).—"River Arun at Littlehampton." Good, a difficult subject to take.

MYERS, E. (Keighley).—"Meeting of the Waters." Spoilt by under-printing and want of clouds.

MAKEPEACE, H. K. (Newcastle-under-Lyme).—"Alnmouth, Northumberland." A pretty little effect, although the lines are a little trying.

CURRIE, J. E. (Battersea Rise).—"A Misty Sunset." This is rather too black, a good thing spoilt in printing.

VULLIAMY, E. P. (Glasburg House, Radnorshire).—"The Shire Coombs." A slightly hard negative, and the sea line is lost.

ANDERSON, W. S. (Edinburgh) — "Sea Shore, W. Kilbride" Horizon not quite straight, but a good effect.

SUTHERLAND, J. U. (Newcastle-on-Tyne).—"On the Annan." Wants clouds to make a good thing.

RODDON, MAJOR (Madras).—"In Tropic Shade." A little too flat.

BUTE, F. K. (Calcutta).—"A Backwater on the Hugle." Good technical work.

BRIGGS, C. (Crouch End).—"The Valley of the Lyn." A good thing, utterly spoilt by over-printing.

PERSON, T. A. (Dover).—"The Boatman's Return." The figures are a little too black, but otherwise good.

NUGENT, J. (Dalkey).—"Round Bray Head." Good work technically.

DACUNHA, C. J. (Edinburgh). — "On the Almond Water." Wants clouds very badly; a good thing can be made out of this.

YOUNG, D. A. (New York).—"The Swannannoa." Too flat and too much foreground.

WATSON, M.. MISS (Florence).—"Mending their Nets." Wants clouds, and too black in the boat.

GLOVER, H. M. K. (Toronto, Canada).—"Humber River." Decidedly good; we shall expect to see better work from this competitor.

DOUGLAS, T. (Gateshead).—"View on the Beach Nevin." Wants clouds, and under-printed.

MANNERS, S. (Manor Park).—"The Budden, near Montrose." Good work.

STABB, J. (Bayswater).—"On the Lyn, N. Devon." Too much foreground.

DAVIS, E. G. (Hereford). — "Hereford Cathedral." Very good technical work.

LEWIS, G. (Tunbridge Wells). — "A Summer Sea." Decidedly good work.

HAMMERSLAY, H. (Kensington). — "On Canal at Aylesbury." Printed too deep, but very fine technical work.

AVELING, T. J. (Hackney).—"Tumbling Bay, near Henley." Good work, but too many straight lines in it.

PREEDY, D. H. W. (King's Norton).—"I go on for ever." Rather too flat.



BRONZE MEDAL. "The Vale of the River Lugg." *G. Edwards.*

GRAY, J. (Glasgow).—"Summer on the Avon.' Good technical work.

ROUTLEDGE, W. J. (Gateshead).—"Deepdale." Very good technical work.

STEWART, A. D. (Barrhead, near Glasgow).—"Ailsa Cragg." A nice little bit of technical work.

CANDY, L. (Brighton).—"Near Shoreham." Spoilt by the printing process; try a rough surface.

FORREST, J. W. (S. Hackney).—"A Close Shave." Three little boats dead in the centre of the picture all together.

MACMILLAN, N. (Port Bannatyne).—"On the Beach." Over-printed, otherwise very fair.

BALL, F. R. (Bromley).—"On a Welsh Stream." There is a want of light about this which is rather depressing; it looks dirty.

SEABROOK, H. C. (Grays).—"A Glimpse of the River Lea at Waltham." Very fine technical work, but wants clouds and trimming down.

JAMES, A. W. (Streatham Common).—"Restful Hours." Over-printed, but no pretensions to art.

BUCKLEY, J. (Stockport).—"A Bend on the Derwent." Over-printed, and we should have liked to have seen more bend.

ALCOCK, N. H. (Merrion, Co. Dublin).—"River Liffey." Utterly spoilt by the blank white sky.

GROOM, W. (Hereford).—"On the Lyn." A good deal more might have been made of this, and it shows unequal toning.

TEBBS, H. L. (Bradford).—"Stream, near Scampston." Wants clouds, but shows careful work.

MACUMLDROW, F. (Liverpool).—"On Morcambe Bay." Slightly under-printed, and too much foreground.

NUGENT, J. (Dalkey).—"U.S. Warship *Chicago*." Wants trimming down, and not artistic.

WHITE, F. G. (Blackpool).—"Monument at Southport." Hardly seascape or river scenery. Over-printed, but otherwise shows good technical work.

COLLEY, E. P. (Dublin).—"Yachts off Kingstown Harbour." A nice little bit of two yachts, but rather uninteresting, as there is not a ripple hardly on the water.

ANON.—"Photograph of Rio Jacuhy." A little too black on the right, otherwise shows very careful work; had the boat been on the left-hand side it would have improved matters wonderfully.

"CHOKER" (Newcastle).—"Light at Eventide." This only wants carefully printing, on suitable paper, with suitable clouds, and a good thing might be made of it.

SAVAGE, G. A. (Folkestone).—"Troubled Waters." Good, but not artistic.

DUNCAN, A. H. (Glasgow).—"Evening." Over-printed, and too many straight lines about it.

APPLEBY, E. J. (Bath).—"The Boat House." Very fine technical work, but the protruding branches, though effective in stereoscopic work, are rather distracting here.

SIMPSON, J. (Kingstown).—"*Britannia* running out for the Race." This would make a good enlargement, but the horizon is not straight.

DICKINSON, J. G. (Keighley).—"By Mead and Stream." Printed far too black, and clouds too light; just reverse them a bit, and try again.

WISE, L. (London).—"A Quiet Corner on the Colne." Uneven toning has spoilt a nice little bit.

BISSETT, J. (Aberdeenshire).—"The River in its Teens." Good technical work, but wants something to break the foreground on right, or else an inch and a half must be cut off.

CROOM, J. E. (London). — "A Light Breeze." More little boats; much over-printed.

HUNT, J. L. (Sale, Cheshire). — "On the Wye." Very much over-printed and over-toned, and it is questionable whether the masking improves it.

DAWS, R. C. (Bingley).—"On the Aire." The water is good, but it is not an artistic selection anyway.

HANCOX, R. (New Maldon).—"Summer." Very much over-printed, and we should say taken from a wrong point of view.

MAVIN, W. (Gateshead).—"In the Gelt Woods." Too flat; all the planes seem jumbled up.

CLASS III.

WHEATCROFT (Exeter).—"On the Exe." Another fuzzy bit printed on chloride paper; this does not look well.

CHILLINGWORTH, R. B. (Cork).—"Blackrock Castle." Lines all running one way, trees too black and yellowed whites.

HEURTLEY, E. G. (Pulborough).—"The Brook, Monkton Combe." Over-printed and too muddled up, one can see nothing.

FELL, R. W. (Bishop Auckland).—"River Tees at Rokeby." Bad. All the lines run to the centre; very much over-printed, over-toned, and yellowed.

JAMES, T. (Worcester).—"Ham Mill." Over-printed, too much foreground, and too fuzzy even to please us.

BROUGHTON, E. (Penally).—"Tenby Harbour." Too much foreground, wants clouds, and very much under-printed.

BALDWYN, E. M. (Bournemouth).—"Three Men in a Boat." A good picture without the three men in a boat.

CREW, F. (London).—"Hillsborough Hill." Much over-toned and decidedly yellowish. In a suitable printing process this might be made something of.

MOTT, H. R. (London).—"River Wandle at Carshalton." Too much foreground; careful technical work but not artistic.

MATTHEWS, J. C. (Torquay).—"Torquay Harbour." Over-printed, and shows signs of yellow patchiness already.

WRENCH, H. H. (Clieveden).—An inch too much foreground; water too white. For such a lovely spot a decided failure.

DAY, G. (N. Kensington).—"On the Yare." Shows finger marks; is over-toned, yellow all over; and the top of the boat's sail is cut off; and far too much foreground.

GIBSON, L. (Ayton, N.B.).—"Outward Bound." Over-printed, and wants trimming down badly; too many straight lines in it.

BOND, F. (Biggleswade).—"River Ivel." Over-printed, and taken wrong way of plate. The boat is in the wrong place too.

DEARLOVE, G. J., jun. (Wallingford).—"Good Sport." Over-toned; a deep yellow tinge all over.

ANDERSON, Mrs. J. (Greenock).—"An Evening Dip." Printed far too deep, and the want of sky gives it a curious appearance.

PEDERZANI, G. (Fulham).—"Towing Path, Hammersmith." Over-toned, and the whole tinged with a deep yellow stain.

DAVIES, G. (Norwich).—"Jaegt Entering Harbour." This is a big print, and with a little more care in choice of printing process might be made considerably better. This print has warm and cold tones in it, and we should say lens or shutter cut off some of the field.

EALAND, A.—Flat and over-printed, or else negative wants intensifying.

GROOME, R. (Acton). — "Kew Bridge." Slightly over-toned and not very artistic.

SMITH, H. B. (Preston). — "Docks, Sarbrough" and "Bridge, Knaresbrough." We cannot understand why these prints are sent in. Printed on the backs of the mounts we find "Photographed by H. B. Smith, Broughton, of whom copies may be had." They are both much over-printed, dirty and unevenly toned, badly mounted, and have no artistic merit.

HUNT, Mrs. F. (Rosshire).—"Inver Bridge." A big stretch of river and moorland and road. Too much has been attempted. Little bits pay best.

GYLES, L. (Dublin).—"On the Owen-na-shad, Lismore." Too much foreground, and over-printed or under-exposed.

NORTON, L. P. (Sheffield).—"A Yorkshire Stream." Composition a little too central, and wants clouds and more detail in white water.

WILLIAMS, P. (Brixham).—"Breakwater Beach." Too much foreground; very much over-printed, and far too flat and covered with shiny patches, due to defective squeegeeing down.

KELSEY, L. (Loughborough).—"Backwater, with Swans." Over-printed, and a very conventional bit and not sharp in foreground, where it should be.

NEWMAN, G. F. (Brixham).—A study in masses and patches of unequal toning.

CARTER, G. E. (Paignton).—"Steamer on the River Dart." A weak negative, and spoilt by a streak of fog right across it.

CARSON, A. (Dover).—"On the Thames." Too much foreground, and negative too hard.

CARTER, H. (Paignton).—"On the Embankment, Dartmouth." Too much foreground, and not improved by the circular masking.

DAVIS, J. S. C. (Hardoi, India).—"Evening in Oudh." Over-exposed, flat, and wanting in artistic merit.

Dark Room at Knaresboro'.—Mr. Southwell, chemist, of High Street, Knaresboro', has opened a dark-room, which is free to customers.

"Photography at Home" Competition.

J. HALL EDWARDS (Birmingham).—Seven prints. All these prints show exceedingly careful work, and are with one exception bromide prints from ½-pl. negatives. This exception is a gelatino-chloride of rather hot tone on a bilious green mount; it must be a very fine picture which will stand a mount of this colour. Included in this series are two studies from the nude, the most pleasing of which appeared last week; in the other one, the wrong leg is bent, it should have been the one nearer the camera.

J. O. ARNOLD (Sheffield).—Six ½-pl. prints, matt-surface chloride. Five of these prints are illustrative of the process of butter making, and are as fine a connected series as we have seen. The last print is good, but the subject is so intensely vulgar as to tend to make one overlook the good work in it.

C. GETHEN (Hereford).—Seven ½-pl. prints on platinotype and chloride paper; the level of excellence sustained throughout all these prints is striking, there is not one which can be called poor work.

A. W. CHANT (Stoke-under-Ham).—Six ½-pl. chloride prints with bright surface. This competitor, we should think, had the advantage of a studio and its accessories; the lighting in all is good, and if there is any fault it is in crowding too much into the picture and the highly ornate mounts.



CERTIFICATE. "Sunset and Eventide." *E. H. Forman.*

A. PEDDIE (Sunderland). — Eleven ½-pl. chloride prints, showing care in selection and technique, but Nos. 6 and 11 might well have been omitted.

G. A. CARRUTHERS (Liscard). — Ten ½-pl. matt-surface chloride prints, which would not have lost anything in merit if Nos. 2 and 10 had been omitted. The one we reproduee is decidedly good and full of humour.

G. A. SAVAGE (Folkestone).— Six ¼-pl. chloride prints, delicate and soft, and all showing good attempts at posing, though No. 6 strongly recalls the advertisement of a large tea firm.

F. HARMAN ORR (Dublin). — Six ¼-pl. chloride prints, full of the delicacy and softness which has before won this competitor recognition.

A. H. WOOD (Darlington).—Nine ½-pl. chloride prints; the best of which are 4 and 7, though the continuation of the top of the pedestal, the arm and vase, is a little painful. 3, 6, and 8 would have been better out of it.

MRS. HENRY BOWLES (London).—Twelve platinotype prints, of various sizes, the best of which are 1, 3, 8, and 12. Nos. 4, 2, and 7 might have been omitted.

J. A. FORRET (Edinburgh). — Seven chloride prints, ½ and ¼ pl.; the best is No. 7, the least pleasing 2 and 3. We think some must be examples of flash-light work, and if so, are very good.

F. DE PAULA (Hendon).—Eight prints, ½ and whole pl. The work here is rather unequal, 3, 5, and 8 being far above the others, 1 and 2 being decidedly poor.

A. H. SEXTON (Glasgow).—Twelve ½-pl. prints. Very unequal; 7 and 3 are gems, and the rest tail off very badly.

C. F. ARCHER (Clapham).—Twelve prints, chiefly ½ pl. Nos. 1 to 4 are the best. A good six might, with care, have been made from this set, and then probably they would have been placed higher.

MISS ELKINGTON (Kidderminster). — Seven ½ pl. platinotypes. Although all these prints show careful work, there is somewhat a lack of artistic merit, Nos. 4 and 7, being the best.

ALFRED STIEGLITZ (New York).—Seven platinum prints; by no means equal in artistic merit to past work of this competitor, and there is a tendency to hardness in many of the prints.

H. R. ARTHUR (New Zealand).—Seven ½-pl. chloride prints from an eight months self-taught worker. All the prints show extreme care in working, and technically are decidedly good, but a little more

liberal use of the scissors or trimming knife would have improved one or two. There are two prints, illustrative of lines from Tennyson's poem "The Brook," which are decidedly good, and we should like to see the whole poem illustrated. Another scene with horses could be improved by less foreground and less printing. It is gratifying to find so young a worker so high up.

S. L. COULTHURST (Manchester). — Eight ¼-pl. snap-shots on chloride paper. All very fair, but not quite good enough; 1, 6, and 7 are the best, the effect in No. 6 being very striking.

MRS. M. J. THORBURN.—Nine ¼-pl. platinotypes, all evincing care in technical work, though one or two have a tendency to hardness; but in nearly every case the figures are staring right into the camera and are far too stiff and formal.

MRS. L. GRANT WATSON (Godalming).—Eight ½-pl. platinum and chloride prints; of these 3 and 4 are the best, 5 is insufficiently printed, and No. 1 has shifted in printing.

H. NOEL MALAN (Epsom) —Six ½-pl. chloride prints. This competitor has a capital child model, and uses her rather unmercifully, so that there is considerable sameness in the prints.

H. FULLJAMES (Wimbledon).—Eight whole-plate chloride prints. We have here some very careful work, and it is only a want of artistic merit which places this set low down. We would point out that in No. 2, "Autumn Flowers," it was a mistake to use a yellow sceen, it has made the yellows too white.

J. FLETCHER, of Philadelphia, sends four ¼-pl. prints, which are all utterly spoilt by yellow whites and over-toning.

W. WALKER (Nottingham).—Ten prints. This competitor writes complaining as to the action of the judges throwing his prints out in the first round, "seeing one of the pictures was awarded a medal at an open competition of professionals and amateurs last week." We are sorry, very, not only that the judges saw fit to throw these prints out in the first round, but also that one was awarded a medal. Certainly we can see no medal picture.

D. O. ROBERTS (London).—Eight ½-pl. platinotypes, most of them under-printed and possessing very little artistic merit.

L. K. TIMES (London) —Six ¼-pl. chloride prints, the best of which is a portrait of a cat; the others are very poor.

MISS A. M. HARMAN (London).—Six ¼-pl. chloride prints, the best of which are 3 and 2. A little more attention to details would improve matters. For instance, why cut off the elbow in No. 2, and is it usual for lovers to sit out behind a Japanese screen in a garden, and why cut off the feet in 3, and is the sitter in 4 deformed? the right shoulder looks far higher that the left; and in No. 1 the camera was not straight. For only nine months' work you show promise, but pay a little more attention to details, and the surroundings of your figures.

J. T. HUNT (Ireland).—Eleven ½-pl. prints, solio and bromide. Most of the bromides are too flat, too grey, and too weak; the best are 2, 3, and 5. The silver prints are an awful pink tone.

H. GASCOIGNE (London).—Twelve ¼ and ½ pl. prints, chloride and mezzotype. The best are 10 and 11, though the idea of No. 2 is very fine, but the lighting is too harsh, and the three vases in the corner, and the three on the wall, the bit of the sofa-head are distracting. We should be strongly inclined to say, have another try at this.

J. GRAY (Glasgow).—Six ½-pl. chloride prints, all too stiff and formal and sadly wanting in artistic feeling.

J. B. PERCY (London).—Seven ½-pl. chloride prints, showing careful technical work, but most of them recalling the ordinary professional show-case.

W. ELLIOTT (London).—Nine ¼-pl. chloride prints. In every one the sitters have been stuck down in front of the camera, and are doing their best to look pleasant; the result is not pleasing.

E. MEARS (Brandon).—Seven ½-pl. chloride prints, most of them showing careful technical work, though 4, 6, and 7 are utterly spoilt by yellow whites.

J. N. HUGALL (York).—Twelve ¼-pl. chloride and bromide prints, all of an intensely high glaze, and every chloride print over-toned.

E. P. VULLIAMY (Glasbury).—Twelve whole-plate bromide and chloride prints, most of which are too hard; Nos. 4 and 11 are the best.

REV. R. J. PEARCE (Durham).—Eight ⅓-pl. and ½-pl. prints, which without offence we may say are at a dead level of mediocrity—neither good nor bad.

J. APPLEBY (Liverpool).—Six 5 by 4 platinotypes. These prints were examined once or twice by the judges as to whether they should not be included in the second round, but eventually were thrown out; they are about the best of this class, Nos. 1, 2, and 3 being the best.

H. HOLLAMBY (Wooperton).—Twelve ½-pl. chloride prints, most of them too deeply printed.

A. W. FLOWER (London) sends in four ¼-pl. chloride prints, to which we unhesitatingly award the wooden spoon.

DANIEL K. YOUNG (New York).—This competitor sent in late eight ½-pl. platinotypes, all very bold attempts at picture-making, which fail simply from inattention to details, for the judges expressed surprise that any man should hang a curtain up as a background, and show the string, the greenhouse, and all surroundings beyond, and at the same time be capable of such work as here shown. We shall hope to see more figure study work from this competitor, and would counsel rather less florid and simple poses first.

To the World's Fair.

BY A LUNATIC WHO WENT THERE.

Liverpool.

PHOTOGRAPHERS must be timid folk, for our party of "The World's Photographers in Chicago," which promised to be a large one, has dwindled little by little till now 'tis but a ghost of a party that our good ship is bearing westward "to the land of the free." Some of the members, we are told, have transferred their passages to earlier or later dates; but many have been scared by fear of the perils of the ocean or by tales of high charges, insanitary hotels, tumbling and crumbling exhibition buildings, and all the other terrors that have been fed to us by the sensational papers. I believe that about two-thirds of those who booked their passages have forfeited their deposits, but the remnant have decided to face all the dangers, arguing that where a million Americans can live and thrive, hardy Britons can surely live for a week or two. And a very merry remnant are we. Already one of us has exposed a dozen cut films on the docks, on the two tugs that are now panting at head and stem of our vessel, and on the group of sailors round the donkey-engine and steam capstan.

Off Queenstown.

A beautiful passage so far. Last night a few shots at the coast of Anglesey, and at the vessels passing between us and that coast. Then a number of plates and films used on a sunset such as we seldom see on land. And how we kicked ourselves because our plates were not orthochromatic! A wait at the mouth of Queenstown Harbour, with long shots at the forts on both sides, and short shots at the colleens who board us from the bum-boats to sell oranges and ornaments, and shawls made by the nuns—which shawls, by the way, of mixed silk and wool, are very beautiful and very good value. Then we went inside the harbour—exactly why, nobody seems to know—and again the cameras were busy. Again we kicked ourselves, this time because our lenses are not ultra-wide-angle, and because we have not brought plates by the gross instead of by the dozen. Shaunessy suggested that we should cable to John Carbutt to run his factory overtime for a week, so as to get a good stock of English sizes of plates on hand, but when he found that the cable charge was fifteen pence a word, and that "isochromatic" would be charged as two words, his courage failed, and we are trusting to find enough material somewhere in stock in America. As we pass along the Irish coast we marvel at the beauty of the land we are leaving, and some of us mournfully wonder why we were not content to stay and enjoy the old country. I think some of us feel just a touch of home-sickness—or is it sea?—but no! Shaunessy is on the steerage deck, busy with the emigrants who came abroad at Queenstown. He is already nautico-Irish, and says, "Arrah, come out abaft the binnacle while I take yer pictur', shure!"—which he thinks fine.

Off "the Banks."

In the Newfoundland fog, off the country which has been abused as the land of "fogs and bogs and dogs," we have no chance of photographing. Even walking about on deck is a chilly occupation, so I have a chance to write a few lines. Nothing of great photographic moment has happened. Yesterday we passed through a school of porpoises larger than I imagined possible. From quite near the ship to the horizon on one side, and as far as we could see ahead and astern, the water was simply alive with them. Scores of them jumped clear out of the water close to the vessel, and Shaunessy wasted a great many plates on them. He worried the deck hands to lower him overboard on a plank to near the water's level that he might get the porpoises clear against the sky. He is a fanatic. Malcolm, another of our party, has developed several of his efforts in the cabin, and they are capitally selected bits, including several unconscious groups on deck, two or three good cloud bits, and a couple of passing vessels. These may be seen by some of the readers of the AMATEUR PHOTOGRAPHER, for my companions, though I do not give their real names, are real persons, and Malcolm is well known in the London societies.

New York.

We have been almost everywhere in the city and in Brooklyn, during the three days we have been here. We are simply surprised and delighted with the place, though it would be hard to give the exact reason. Somehow everything seems bracing; the air, the people, the sunlight, the rush and hurry of a big, earnest, purposeful city. The one thing that has struck us most is that the people seem

so English. They are not like foreigners at all, and everyone we have met seems so obliging and anxious to help us. There are many things that strike us as curious, the shoe-blacks with their high chairs at the corners of principal streets; the ugly ramshackle telegraph poles with their enormous burden of wires; the thin mule-like-horses; the tram-cars carrying just double the number they can seat; the infernally bad paving in some of the busiest streets. These and a host of other things we have recorded on our plates. By the way, I ought to have said that we had no trouble whatever with our cameras in the customs house, bar Shaunessy, who came near having to pay 30 dols. (say £6) owing to his own stupidity—which he took for his extra sharpness. The system is simple enough, and the customs examinations rather a farce, but occasionally some one who attempts to be extra smart is detected. The customs officers come aboard the vessel as she approaches the city, and passengers are invited to make declarations of such goods as are ordinarily dutiable, but which they wish to "swear off" as being articles of personal use, tools of trade, etc., and therefore duty free. The value of articles thus sworn off has to be declared, and while the rest of us did this cheerfully enough, Shaunessy thought it was some "scheme," and declared he had nothing to declare. On landing, those who had declared cameras were asked to show them ro an assessor, and our baggage was immediately chalk-marked and passed. Other passengers simply opened their portmanteaus, at the inside of which the examiners merely glanced contemptuously before chalk-marking them. By some unhappy fate, Shaunessy happened to meet a rather surly examiner, who really examined to some extent. The camera came to light, and as it was unusually new-looking, there was trouble, and when Shaunessy arrived at the hotel some three hours after the rest of us, he told a harrowing tale of his experiences. A friend who is well acquainted with some of the custom-house brokers says that there was a case this year when a man who had a new camera and other new goods, and who made the mistake of being very uncivil and offensive in his language, was charged a heavy sum as duty and fine; but this case and Shaunessy's are the only ones ever heard of where trouble has been made about a camera.

As I said before, we have been almost everywhere. Perhaps the most enjoyable trip was to the extreme north of the island on which New York is built, to Washington Heights. It is a remnant of the island that has not yet been built over, though the march of "improvement" is rapidly approaching it, and it is now surrounded by hundreds of villas that had no existence two years ago. It is a tongue of land running up between the great Hudson and its little branch, the Harlem river, and is largely patronised as a picnic place, an American 'appy 'Ampstead. Ice-cream and pea-nut saloons abound, but beyond their northernmost limit there is a space of open wild land, over which a high road gives a splendid outlook. The Hudson, dark and slow, under the steep crags known as the Palisades, bears a few white-winged yachts, while the more prosaic Harlem has only one or two panting steam-tugs, struggling along with preposterous strings of barges, laden, apparently, with bales of cotton.

This place requires a Moessard's Cylindrograph or a Stewart's Panoram to do it justice, and we turned from it with regret, feeling that any representation we could make with our little cameras would be an insult to the scene. But we enjoyed it immensely; and if your readers were naturalists instead of photographers, I would tell them of the fragrant sweet fern, the luscious low-bush blackberries, of the beautiful sumach bushes and locust trees, of how the air was filled with the chirping and buzzing of myriad crickets and locusts and grasshoppers. I would tell them how the grasshoppers flitted like the most beautiful bttterflies, and how their lovely wings folded suddenly and left nothing but a long brown grasshopper, like a bit of dead stick, on the floor. But your readers are not naturalists.

A few of the hospitals and orphanages near this point are well worth a plate; and many of the little frame-houses, nestled under a few shade-trees, with the family sitting reading or working out on the "stoop," and their pets—pigeons, rabbits, and fowls—playing on the sward in front, make interesting pictures of American home life.

Close to Washington Heights is Washington Bridge, a really magnificent structure, built mainly for pleasure purposes, and spanning the valley of the Harlem at a great height above the stream. Here there are views both up and down the river that are more or less manageable with lenses of ordinary angles. We crossed the bridge, followed the river for a couple of hundred yards, and then crossed again by High Bridge, a structure containing the great pipes that bring the water supply of New York from the distant Croton Lake. From here there is a good view of the Washington Bridge, and from the top of the reservoir there is a magnificent panorama of New York, Brooklyn, and the Berkshire Hills.

Cable car took us back to Riverside Park, with more magnificent panoramic views up and down the Hudson, which is here busy with ferry boats, pleasure yachts, and a host of other small craft. It was here that we found that Uncle Sam can be as stupidly restrictive as any of the "effete civilisations" of which he speaks so scornfully. On this "park," which is really an unenclosed common, is the temporary resting-place of General Grant. A magnificent monument is being erected, but meanwhile his coffin, of rivetted boiler-plates, rests in a little brick hut some twenty feet long by fifteen wide, by fifteen high. Shaunessy thought to spend a plate on this temporary tomb of a hero, but as he took sight upon it he was checked by the gruff but kindly voice of one of the policemen in charge, who said with a truly delightful disregard of double negatives in grammar, "Say, cap'n, ther' ain't no photographin' allowed 'ere, not unless you ain't got a permit," and as we had no permit we had to do without the photograph. We adjourned to Central Park, where also permit is required; but as there seems to be no law against carrying cameras we got all the views we had time for by working when the police were not about.

(*To be continued.*)

Photographers' Efforts at Union.

By H. Snowden Ward

(Editor of the *Practical Photographer*).

(*Concluded from page* 126.)

Efforts Now Existing.

So far as I am aware, the efforts at union existing at the present time, and likely to be of use to professional photographers, are:—1. The Photographers' Association of America, with the various State Associations, which I consider as its auxiliaries. 2. The Photographers' Association of Canada. 3. The National Association of Professional Photographers. 4. The Photographic Convention of the United Kingdom. 5. The Photographers' Benevolent Association. 6. The Affiliation of Photographic Societies, in connection with the Photographic Society of Great Britain. 7. The International Photographic Congress.

A very brief outline of the history and constitution of these societies may not be out of place. 1. The Photographers' Association of America (Secretary, Adam Heimberger, New Albany, Ind.) may be said to be a continuation of the National Photographic Association, founded in Philadelphia in 1868, after a preliminary convention in New York in 1867. The National Photographic Association was a strong and useful association, which fought patent claims, circulated special formulas, helped the needy, and took up such questions as apprenticeship, insurance, etc. At one time it had 1,500 members; it held conventions in various cities and did much good until 1879, when it practically expired, and in 1880 was merged in the present Photographers' Association of America. The new association has not been conducted without great friction. Its membership at present is stated as 2,936, and the average attendance at its annual conventions (1885-91) has been 588. It has noble objects, few of which have been attained or attempted, mainly (apparently) owing to unsatisfactory management in the past. Among the State Associations which I consider as its auxiliaries are: The Photographers' Association of Ohio, founded 1891, and absorbing the Photographers' Association of North-western Ohio, founded in 1890. It has some two hundred members, and appears to be flourishing. Holds an annual convention. Photographers' Association of Iowa, founded in 1890. Holds annual convention. It is not so successful as the above named. Has about one hundred members. Photographers' Association of Nebraska, founded 1890. Holds annual convention. Not well supported.

2. The Photographers' Association of Canada, founded 1884. This association holds annual conventions, and seems flourishing. 3. The National Association of Professional Photographers. (Secretary, D. J. O'Neil, 47, Charlotte Street, Birmingham, Eng.). Founded 1891, in the interests of the profession. Holds meetings about once a quarter in the principal English cities alternately. Has some one hundred and sixty members, including most of the best British professionals, but has not done much practical work, owing to the small extent to which it has been supported. 4. The Photographic Convention of the United Kingdom (Hon. Secretary, F. P. Cembrano, Cambridge Gardens, Richmond-on-Thames). Founded 1886. Holds an annual convention for reading of papers and discussion, exhibition, and excursions. The "social element" has become predominant. Membership two hundred and fifty to three hundred. 5. The Photographers' Benevolent Association (Hon. Secretary, H. Snowden Ward, Memorial Hall, London, E.C.). Suggested by Mr. A. H. Wall in 1864, but not founded until a meeting of assistants was called in 1873, when a Photographers' Benefit Society was established. At a later date it became purely benevolent. It does considerable good in a quiet way, derives most of its funds from manufacturers and amateurs, and dispenses them

entirely to professionals and assistants. Has been generally neglected by the profession. Has a fund of nearly £400 in hand and has the making of a valuable institution. 6. The Affiliation of Photographic Societies (Secretary, R. Child Bayley, 50, Great Russell Street, London, W.). An affiliation started by the Photographic Society of Great Britain, and consisting of a number of amateur and mixed societies. Might prove a valuable factor in a comprehensive scheme of union. 7. The International Photographic Congress. Suggested by the jury of the Brussels Photographic Exhibition, 1885. Initiated in 1886 with the King of the Belgians as patron, but did not meet until 1889, when a congress was held in connexion with the Paris Exhibition; a second congress was held in Brussels in 1891. On both occasions large congresses of the best-known photographers devoted several hours a day for several days to the careful discussion of various practical questions, and made recommendations as to standards, etc. Of the intrinsic value of their work there can be no doubt, but to English-speaking people it has been rendered practically useless, because they have not been adequately represented, and because the congress has no adequate means of conveying them the results of its deliberations. These difficulties would be at once cleared away under a scheme of union that embraced federation with the congress.

These societies as they stand do not furnish the materials for the Ideal Union, and in order that we may see what can be done towards attaining the ideal, it will be well for me to state what the ideal seems to be.

In each country there should be: 1. A national association, including, as sections or affiliated societies, (*a*) A manufacturers' and dealers' union, (*b*) a strictly professional union, (*c*) an assistants' union, on benefit society or trades union lines; and (*d*) state, county or district associations, and, where possible, town associations, affiliated to the national association and directly represented in its management.

And in addition to these, there should be an international union, with a separate section for dealing with purely professional questions, but also including the fullest possible representation of amateur societies and workers, for combined conference on all subjects that are of interest to amateurs and professionals alike.

This brings us back to present possibilities and to a consideration of what ought to be attempted forthwith for the realisation of the ideal. 1. In the United States, the increase of State and other local associations, and their affiliation with the Photographers' Association of America should be encouraged as far as possible. The possibility of reviving or forming a Dealers' Association and an Assistants' Union, either independently of, or within the Photographers' Association of America, should be carefully considered. The formation of a benevolent or a provident fund, or both, should be taken in hand. 2. In Canada, the Photographers' Association of Canada should work on similar lines. 3. In Britain, the National Association of Professional Photographers should be immensely strengthened and every effort made to increase the number of its local branches. It should consider the possibility of forming an assistants' branch, or of encouraging the formation of a separate Assistants' Union, and it should give what attention and assistance it can to the Benevolent Association, as to an institution which ought naturally, and is likely eventually to be under the control of the National Association. The effort made last year to co-operate with the Convention should not be relinquished, even though it did prove a partial failure; and the advantages offered by the affiliation scheme of the Photographic Society of Great Britain should not be overlooked.

In India, Africa, Australia, New Zealand, and elsewhere attempts should be made to form professional societies similar to those above mentioned. Every such effort should be encouraged and aided as far as possible by the older associations.

Finally, an International Union is much needed, and as it is always economy to use existing institutions rather than to create new ones, I would suggest that a great effort be made to have at least one delegate, and, of course, as many more as possible, from each of the national associations in attendance at the International Photographic Congress. Though that congress at present is rather scientific than professional in its tendency, most of its subjects of discussion are of great practical importance to the professional worker. Moreover, any subject suggested by delegates or by the societies they represent would be accepted for consideration; and if even two or three professional representatives joined, there would be no difficulty in arranging a separate professional section.

The suggestions that I make as being immediately practicable are not novel; they are not revolutionary. You will see that I almost entirely suggest procedure on present lines. The only new thing that I ask is that photographers will consider their present societies not only as ends in themselves, but also as means to a greater end. There is much to be done in perfecting the machinery before we can hope for much in the way of results, and the work must be done in the good old-fashioned way, "line upon line, precept upon precept; here a little and there a little." That much could be done by the ideal union no photographer doubts. But many, the immense majority, look upon the thing as Utopian. And so it is if we are to wait until the whole is in our grasp before attempting to realise it. This has been the bane of too many photographic efforts at unity. It is their bane to-day. The men who should support them, and often the men who do support them, are unable to do the thing that they would, and unwilling to do the things that they can. For the great things they are powerless, and the multitude of little things that they can do they despise. But in our present unions there is so much promise that we ought to feel encouraged to trust and to work for the future. And this year, when international courtesies are being exchanged, when parties of Old-World photographers have been visiting this New World, and when this series of congresses is holding up the ideal of unity, I have felt that we could have no better or more profitable subject of discussion than "Photographers' Efforts at Union." It may be that from our deliberations some practical good may spring. I should like, if possible, to have some resolution sent from this congress asking the various bodies that I have named to consider what is possible in the way of federation, immediate or prospective; and, even if we have no practical photographic result, I trust that our meeting may twist one small strand in the tie of fellowship that binds the nations, and help us one step nearer to

The parliament of man,
The federation of the world.

Fine Line Screen Plates and their Use.*

By M. WOLFE, Dayton, Ohio.

WHILE I appreciate most highly the honour conferred upon me of preparing a paper to be read before you on the subject "Fine Line Screen Plates and their Use," I also fully appreciate that the task is one of difficulty, and that to treat the question properly much more time than I can take would and ought to be required.

The manufacture of screen plates has occupied my attention for the five years past and necessitated many experiments and expensive ones and required large research, yet the field beyond still seems more immense than that already passed over.

The subject is one requiring much thought and study and constant experimenting. Without taking up time I will at once proceed to my subject, giving, in my own plain way, my impressions and the results obtained by me, being fully aware that same may be the subject of much just criticism.

The object of fine line screen plates briefly stated—their use being for the production of half-tone relief blocks for typographic printing.

Screen plates are rulings on glass, having opaque lines with transparent spaces, and can be produced by mechanical means or by mechanical and photographic processes combined. In actual use, according to the character of the work to be reproduced, screen plates may have from sixty-five to two hundred lines to the inch. The most generally useful screen having one hundred and thirty to one hundred and thirty-two lines to the inch.

The screen is for the breaking up of the continuous gradation of light and shade in a photograph, into absolute opaque lines and dots, with transparent spaces between.

It is not an easy matter to convey to the uninitiated the exact meaning of the above terms, but it can be easily understood by the examination of a photograph having a continuous gradation from light to shade and a reproduction from same by the intervention of fine line screen plates. In the latter the picture is exact in fac simile, the impression to the eye is the same as the original picture, but instead of the gradation of light and shade as described above, it will be found to have an even tint or colour of dark lines and dots with perfectly white spaces to correspond to give the effect of the original picture.

It will thus be seen that by the intervention of the screen, as will presently be described, it is possible—

First, to make a half-tone negative in absolute black lines and dots with transparent spaces between to correspond; and

Second, from this an engraving with an even surface, that when mounted on a block, type high, is capable of producing the most beautiful impressions known to the typographic art.

To do my subject full justice, some mention must be made of the earlier attempts to produce typographic printing blocks. As long ago as October 29th, 1852, Mr. Fox Talbot took out a patent—he used folded gauze to obtain a grain. Later on, December 4th, 1872, twenty years after the above, Walter Woodbury patented the use of "mosquito netting," and "Brussels net," and again in a patent, May

* Read at the World's Congress on Photography, August, 1893.

30th, 1873, he claimed the use of fine ruled lines. Lastly, Woodbury obtained a patent October 5th, 1883, for the use of fine ruled lines, netting, gauze, dots, or a print from a grained stone.

Of all the above European patents, none seems to have had any practical value, and the first published attempt to obtain relief half-tone blocks by the aid of photography was the patent of Meisenbach in Munich, whose method consisted in imposing a transparent positive of the subject to be engraved, in connection with a sheet of glass covered with diagonally ruled lines alternating opaque and transparent, and re-photographing this positive and ruled screen together and reversing the direction of the lines upon the screen by inverting the screen after about one-half of the exposure is completed. This method, with various modifications as will be explained further on, is in use by a good many engraving firms to the present day.

Looking back with the knowledge and trained eye of the present day it is amusing to think of the earlier attempts and what ideas were had in regard to the requirements of a fine line screen plate. Among the first partially successful attempts was to rule a copper plate diagonally one way with fine lines, then from this to pull an impression on fine white enamelled paper and with black ink, then from this to make a negative by the wet or collodion process, having perfectly opaque lines with transparent spaces, the negative so made being used as a screen plate.

It may be said that at this stage the operator's hopes were mountain high, and success seemingly assured, only to be dashed to the ground by unexpected and unforeseen obtacles in the path.

1st, the extreme difficulty of obtaining a perfect impression having pure black lines without breaks or flaws, and 2nd, an unsurmountable obstacle in copying from the impressions that was entirely lost sight of in the anxiety to obtain a perfect ruling, this obstacle being no less than the nature of the lens itself. To explain, the view of the ruled impression, on a *direct* line from the lens, *i.e.*, the centre of the impression, the lines and spaces were in proportion as the original in the resulting negative but *receding* from the centre, the spaces were less wide in proportion to the distance from the centre; the result being that from a large ruling a comparatively small screen could be produced of any value. Oh! the hopes dashed to the ground! It is only the enthusiastic workers that can understand studying and toiling buoyed up by fond hopes and fancies—at the last to find some obstacle, not seen or calculated on, seemingly unsurmountable. Success, though, is a succession of failures, and this was the first real step to success. The next was to coat a perfectly flat or crystal plate glass with an opaque film, then to cut *through* this film lines of various thicknesses and number to the inch according to the character of the work intended for reproduction. When this was accomplished success was assured; it can readily be understood that lines so produced were perfect in proportion throughout the whole plate.

As to the nature of the film on the glass plate and its list of failures before perfection, it is out of the province of this paper to explain. Suffice it to say that the glass plate having been prepared with the film as described it is placed on a perfectly level bed plate of an engraver's ruling machine and fastened firmly in place.

In the operation of ruling the most extreme care is necessary. When once the machine is set in operation it must be kept going with an even, steady motion until the ruling is complete; any stoppage even for a short time will make a difference in the spacing at that particular place that can readily be detected on examination.

The cutting tools are diamond points made so as to cut through the film but without cutting or scratching the glass. These tools are made to cut any width of line desired, and are the perfection of workmanship. It can be surmised they are very expensive. This screen plate placed in front of the sensitive plate in the camera or in connection with a transparent positive and reversed during exposure constituted the first real success in the making of half-tone negatives for the production of half-tone relief blocks.

Screens prepared as described were open to the objection of rapid deterioration, and especially if used in the camera plate-holder in front of the sensitive wet-plate moist with the nitrate of silver solution of the bath. The solution would get on to the screen and in a short while would be spotted and useless. Various means were resorted to to overcome this serious difficulty, until at the present time the screens are cemented with a colourless cement, to a cover or protecting glass, that insures permanency to a great degree.

At the present day there are two well-known methods of manufacturing original screen plates. One is to rule or cut through an opaque film prepared on perfectly flat crystal plate glass, another is to prepare a wax ground on the same kind of glass, then to cut lines through this, after which, the glass (laid bare in lines) is etched to a certain depth with hydrofluoric acid; this gives ridges or furrows, which after the glass is cleaned of the remaining wax, are filled with India ink. This gives a very intense black line with clear glass for space.

On a first cursory glance it would appear that plates so prepared would be more permanent or better adapted for the purposes intended, but such is not the case; there are serious difficulties attending their manufacture any way you will, and of the two well-known methods it would be a question to decide between.

The defects as they exist in both methods the manufacturers are no doubt endeavouring by all the skill at their command to overcome. It should also be borne in mind that at the present day the rapid advancement of this beautiful art demands a screen plate that only a few short years ago would have been considered a marvellous achievement.

So far this paper has only generally treated on the production of single line screen plates. The subjects now under consideration will be, the proportion of opaque line to transparent space and the manner of use to give the best results.

The cross line screen plate, how produced, the proper proportion of opaque line to transparent space—manner of use and why, as a screen, it is the best and most generally used.

The production of screens and the causes leading to it, etc., etc.

In the use of the single line plates the effect of "lines and dots," "black lines" more or less wide to represent the detail and "dots" to represent the high-lights, as seen in the resulting etching or reproduction, is by far the most truthful and pleasing manner of reproducing with the single line plate.

Experience has taught that the best method to obtain this result is to use two single line screen plates of exactly same number of lines to inch, but one having the opaque line *three times* the *width* of the *transparent*, the other, the opaque and transparent lines equal, but running in the opposite direction.

The use of the screen would be as follows: 1st, a special kit is devised for the camera plateholder—that will hold the screen firmly and at a certain distance in *front* of the sensitive plate; the exposure is given of sufficient length of time to bring up all *detail* in the shadows, and the separation of the screen and sensitive plates should be such that the opaque lines resulting in the *high lights* of *negatives* will be of same width as the black lines of the screen—in other words, the light from the high lights of picture or positive, passing through the narrow openings of screen, *will spread* and make a black line in the negative, as above described, if the screen and sensitive plate are separated proper distance, while in the middle tones the black lines will be *more or less* wide, according as the detail is light or dark.

A negative made in the above manner while giving an exact reproduction would lack *contrast;* the high lights being represented by very narrow black lines would not be *as light* as they should be; these lines must be *broken up into dots*, and to do this the screen with even lines must be brought into use. After the exposure, as described, the plateholder is taken to the dark-room and placed with the back or door to the wall—remove the slide—take out the screen and in its place put in the one having even lines—an exposure now should be given to *simply cross the lights*—no more or the reproduction will lose in detail and be too light.

The foregoing is the true principle of obtaining a correct reproduction of an original, by the use of single line screens. The elements to secure success being that the operator understands thoroughly the old wet plate or collodion process of photography, as all negatives for this or any engraving method should be made with wet plates.

In the use of the single line screens it will be seen there are two exposures, the plateholder must be removed from the camera, taken to the dark-room, and the screens changed; if the special kit holding the screen and sensitive plate is firmly held in place, and the plate-holder fits snug on the camera box, there will not be a particle of danger of movement of the sensitive plate already having one exposure, and the results, if properly done, are elegant. Yet, the time taken up in making the two exposures is considerable. The risks of getting a perfect negative are nearly doubled from what it would be if one exposure was only given; and in these days of sharp competition when work must be finished with dispatch, any saving of time is a great boon. Therefore a method devised of obtaining results equally as good if not better with *one exposure*, was a great advance.

The discovery of the *crossline* screen plates marked a new era. The results were found to be as a rule far superior and the chances of failure from the fact of one exposure, considerably lessened.

How Produced.—If the glass is covered with a wax ground, the lines cut through this, then etched with hydrofluoric acid as described, then it would be necessary to rule either two plates in the same direction and when brought face to face the lines would cross at right angles, or, after ruling the plate one way diagonally, to turn it about and rule it the other way so the lines would cross at right angles on the same plate; the latter process or method having the disadvantage of being liable in the etching to eat away the corners of the intersection and not fill properly with the ink, most likely in isolated places, thus making the working of the plate some-

what uneven. In the other method or where the lines are cut through an opaque film, success depends, first, on the evenness of the film; second, on its character; if too brittle ragged edges would be the result; and third, on the tools employed in cutting the lines; two plates would have to be ruled singly and in the same direction, then brought face to face.

The ruling machine used for the purpose must be as perfect as mechanical ingenuity can devise—any deviation in a line, no matter if a hundredth or one two-hundredth of an inch, can be instantly detected on examination.

The proportion of black line to transparent space in a cross-line screen:

In reproducing a subject when the reduction is great or when the light parts are very strong as compared with the shadows, a screen in which the proportion of opaque lines predominate would give the best result, but the most generally useful screen would be prepared as followed: take two single line screens ruled exactly alike, diagonally, in same direction and in which the opaque line is one-half the width of the transparent, bring them together face to face; the lines will then cross at right angles and the transparent spaces will be equal in area to the opaque lines. This will make the most generally useful screen for all purposes. The manner of adapting the use of the screen to different subjects being well known to the professional negative maker.

The manner of use or action of the cross-line screen, as will be seen from the foregoing description, the opaque lines cross at right angles making a *square* transparent opening. To illustrate the working: Put the screen and sensitive plate in the plate-holder, separated the proper distance, place in position on the camera, point the lens to a *white card* and make the exposure; if properly timed, the light passing through the transparent openings of screen will not form square, but round black dots in the negative and will *join solidly* at the edges, leaving the *intersections of the line as a transparent* dot. This white card would then represent the high lights of a picture; it is evident, then, that in the detail these black dots in the negative would be more or less large according to the gradation of light and shade in the picture, while in parts of subject having black without detail, there should be no opaque dot whatever.

The reproduction of screens and causes leading to it:

The nature of screens reproduced by photographic means: The making of an original screen not only from the difficulty attending it, but the very expensive outfit required, makes it necessary to charge what would seem to be an exorbitant price for them. Nearly five years ago the writer of this conceived the idea of manufacturing screens, first making an original, then reproducing from it, and at a price within the reach of any good engraver. At that time good workable screens could not be had at any cost, and the number of engravers in the United States making half-tone reproductions could be counted on the fingers of one hand. This seems an exaggeration but it is literally true.

Look at the half-tone work of to-day, and the countless numbers engaged in it; see the beautiful reproductions, artistic in every sense of the word, that are being done with the use of fine line screen plates and the half tone process, and may I not feel a pardonable pride for my share in the advancement of this beautiful art?

The impossibility of obtaining original screen plates, and the great demand created for them as soon as their possibilities once became known, led to formulating the following reproduction process as worked by myself for the last four years:

First. The original screen-plate is made by the method described, of first coating a prepared glass with an opaque film; the lines are cut through this diagonally, one way only. The cut or transparent line one-half the width of the opaque. Whether an original would have eighty or up to two hundred lines to the inch the relative proportions for practical working should be the same. The original being prepared, the next important step is the selection of the glass for the reproduced screens. It is absolutely necessary that the glass be crystal plate—perfectly flat and without bubbles or scratches, and best if about one-tenth of an inch in thickness. This is prepared as collodion dry plates. It was not without many failures and discouragements before a suitable method could be formulated, one that would give an intense black line with clear glass for space, and though finally got, yet it requires the most extreme care, or failure will result.

The original screen and sensitive collodion dry plates are placed in absolute contact; one exposure is made, the plate is then turned and another exposure given with the lines crossing at right angles. The plate is then developed, fixed and intensified, and after washing and drying is ready for sealing to a cover or protecting glass.

In the method just given for reproducing by making two exposures to obtain the cross lines, the cross section or where the lines cross, is somewhat enlarged so that the transparent opening is *not* exactly square and for this reason, provided the lines are *perfectly opaque*, and the openings or spaces transparent, it makes a very much *better working* screen than the original itself, giving more of the effect of a well-shaded photograph, and without a certain harshness peculiar to a reproduction with a screen having the lines cross with sharp angles.

It is a notable fact that if a screen could be prepared with the transparent openings *round* and in the proper proportions, it would give the most pleasing effect and be much the easiest to work, but such screens could not be made commercially. I succeeded at one time by a process of copying to obtain such a screen, but it was before the days of sealing. I used it as long as I was able to preserve it, but from that day to this I have not had time to make another.

It might be argued that the film of collodion on a collodion dry plate would be some obstruction to the light, but if clear, as it should be, between the lines it will be as transparent as the glass itself, and so thin that it could not possibly be any obstruction.

I could readily enlarge on the subject at hand, but feel that already too much time has been taken and that my paper should come to a conclusion.

I thank you all for this opportunity of explaining principles that generally are very far from being understood, and I trust that in so doing I have not been irksome to you.

Holiday Resorts and Photographic Haunts.

THE WEST SUSSEX QUADRILATERAL.

BY THE EDITOR.

(*Continued from page* 130.)

MAKING Amberley Station again our starting-point, we struck inland, making for Bignor and the Roman Pavement and Roman Road. After leaving the station, cross Houghton Bridge, and turn into the towing-path, and follow the river Arun to the right till Bury is reached. Several pastoral pictures may be made on the way, and on reaching Bury a good general view of the church may be had from close by the river. This church has a curious little shingle spire. The word shingle naturally recalls the beach, but in this case shingle means small bits of oak; in fact, one might almost say that they are oak tiles.

From Amberley too Houghton Church may be reached, and one or two pictures made here; but to reach this it is advisable to keep on the high road after leaving Houghton Bridge, and then bear off to the left for Bury. After leaving Bury the high road leads to West Burton, where some quaint old cottages will be found; and then continuing through West Burton, bearing towards the right, Bignor is soon reached.

All the country people one meets are polite, and willing to give one any information, but the inquirer must be a good *lingo-ist*. I was curious enough to take down on the spot as far as I could the phonetic direction received to find a certain place, and here it is: "You keep alang, and when you coom out a' t' bottom, keep thwart th' ill till you coom t' hovel. Then on the ston till you coom to a geät. Go threw that geät, crass the the feärm, and alang wheer t' road jines th' 'ill." This is a very fair specimen of West Sussexian. The following example of the effects of the free education Act is too good to leave out, and as it occurred not far from the ground we are now considering I may be pardoned if I drag it in. Scene, the village street; dramatis personæ, three girls, the eldest about eleven, and one small and grubby boy busily engaged in making a dam across a stream of muddy water; a lady pedestrian crossing from right to left; in the background a village matron yelling at the top of her voice, "Gearge, Gearge." The three small girls and one small boy still strive to see who can get the grubbiest, regardless of the strident voice. Lady Pedestrian, "Come, little one, don't you hear you are being called?" One small and very grubby girl, "Ga'on, her ain't a' callin' we, us doän't belang a she." Exit lady pedestrian incontinently.

But for the tourist a good map is an absolute necessity; and the best I have seen yet, at a reasonable rate, is one which I found in an old illustrated guide to Littlebampton; this is published by the Misses Holman, Beach Library Western Road, Littlehampton, price sixpence. The map includes far more than the district we are travelling over, but this is better than not including enough. Speaking from experience, let me advise the tourist to cut his map up with a sharp knife, and mount it on ordinary mounts, and make a little pocket-case for it. Only those who try and examine a map, about 3 ft. by 2 ft., in the open country know what a lot of bad language is caused, particularly if there is a wind blowing, and it is not always convenient to lay the map on the ground, with a stone at each corner, and then lie down

to examine it, particularly if on a turnpike road. Another little bit of advice—do not be afraid of taking short cuts, if you can see from your map they lead you out on to the same road again; many an interesting corner is to be found by so doing. But don't take short cuts which lead practically nowhere; somehow you don't find this out till afterwards. Always consult your map. I have had a little experience this summer of short cuts, and I'll have no more of them.

However, "returning to our sheeps," we arrive at Bignor, and see by the wayside a signpost, "To the Roman Villa—ask in the village." Probably some one may be misled by this. Fortunately, I was not quite so verdant as one of Mr. Marshall's boys, who, so Mr. Marshall says, expected to see a beautiful two-storey house, and was much disappointed to see only some low barn-like buildings with thatched roofs. I might add that these are not the Roman villa; the Romans may have used thatches, but probably they would not have lasted in such a good state of preservation as the buildings here seen are in. These barn-like buildings have been erected, however, to protect the Roman pavements, etc., from the effects of our English climate.

The pavements are on the property of Mr. Tupper, who will gladly show them to any one, a perfectly justifiable fee being charged, of course. I did not photograph them for a particular private reason,



Bury Church.

and I shall not trouble to describe them, leaving that task in the abler hands of Mr. Marshall.

Passing Mr. Tupper's house and going towards the downs, we went up a narrow road, which gradually rises and becomes very chalky. Bearing to the right we had a long and intensely hot pull up the downs, and I may say to those who carry a big camera, leave it behind at the bottom; not that there is no chance of picture-making, but—and a very big but too—I question much whether any pictures obtained at the top are photographically worth carrying a big camera up for. Such lovely views there are too! Turning back, one sees below the little village of Bignor, and dotted here and there other trim little hamlets amongst rich brown and green fields broken up by a blazing square of gorgeous yellow mustard in full flower, which at a little distance looks all yellow, not a green leaf or break in its lovely golden yellow surface, and in the distance the slender spire of Petworth Church, and further still the wooded North Downs, above a magnificent blue sky flecked with brilliant sunlit cumuli or a faint feathery cirrus, the former casting a partial shadow over the lovely weald and instinctively calling to mind the phrase, "floating isles of shade." Turning our back on this, we trace the silvery Arun winding in and out, here lost behind some little stretch of wood, anon peeping out again past many a cluster of houses till lost in the pale blue sea and sky, which almost seem one. Not a sound of human life is heard, nothing to break the charmed silence, save but a faint tinkle, tinkle of the bell of some wether sheep, which, as we slowly stroll on, grows louder and louder, or the drowsy hum of a bumble bee and the sharp chirrup of a grasshopper, hidden somewhere at our feet. A frightened rabbit watches us for a moment, and then, showing his little white tail, darts off to his home under a clump of heather or a sturdy juniper bush. Of gorse there is none, nearly the whole of the bushes being the common juniper, with blackberry winding in and out, and giving just a faint tinge of red with its fast ripening berries and stout stems.

Certainly a pleasing prospect and well worth the climb, though not what we came to see, for on these downs—this particular part being known as Bignor Hill—our map tells us is the old Roman Road, or the Stanestreet. At first we were afraid our climb was fruitless, but my legs being somewhat younger, I did a little further prowl, and at last hit upon it. No mistaking it if you have once seen it or a sketch of it, so unique is its appearance; and having found it, we walk a little way along the central ridge or vallum (see Mr. Marshall's notes below), and then in a straight line below us we see a magnificent valley of wood, with here and there a glimpse of shining water, and in the distance a slight haze, through which rises Chichester Cathedral spire, and right on the horizon the sea, and, imagined more than seen, a faint, low-lying cloud-like mass, the Isle of Wight. To anyone who may visit this part I would say, on no account miss this bit; it is well worth a little hot and hard work.

Getting back to our trap, we drive to Sutton, on the road passing a very old house with curious herring-bone work on the front, with a thatched roof—this we, of course, must photograph—and then on through lovely lanes; and only those who go through them know what a West Sussex lane is. High trees meeting overhead give grateful shade; heneath, high banks rich in ferns and starred with the delicate lavender scabious. Here in a damper spot we catch the gleam of the scarlet arum berries; tall mullein spikes, with its hright yellow flowers and woolly leaves, putting to shame almost its humbler companion, the wild yellow snapdragon, and still humbler trefoil. Tall Canterbury bells rear their heads above the mass of bracken, which is already fast turning in the more exposed parts to the brilliant gold of autumn. And then on till we come to a stretch of firs, and, gleaming hright between their brown scaly trunks, a reed and lily covered lake, which is the last of the Burton Ponds and which feeds Burton Mill, whose wheel, now idle, we cannot help taking with its little noisy splashing jets, and linger for a moment to note the damp-loving mosses and ferns and water plants growing in such profusion on the mill wall by it. Here we expend no less than four plates, none too many, an old dovecote coming in well in the foreground in one picture.

On again into Burton Park to the quaint little church and the hideous house by its side, startling a few deer, which are almost white, and which we mistook at first for sheep. The house is built with huge Corinthian columns in front, which seem utterly out of keeping with their position. Behind the house lie the fish-ponds, where many a picture can be made, and which are shrouded on most sides with magnificent trees, beech elms and firs; rushes and water-lilies break up the surface, and the coot darts in and out with its harsh cry; and further off two stately swans ruffle their plumage and look with pardonable pride at their reflections in the still water which reflects the sky and clouds.

Having thoroughly enjoyed all this, we then return to Amberley by another route, and, thoroughly worn out, we gladly welcome the steaming tea and new-laid eggs at the Houghton Bridge Inn. Why riding in a waggonette should tire one so is a mystery, but speaking for myself I am more tired than if I had walked the whole distance. Driving is very nice, but walking is better, I think; it is true, perhaps, one does not cover so much ground, but there is a special pleasure in having done a good day's walk, which, to my mind, far outweighs the pleasure of even a padded seat and a fast-trotting nag.

Amberley to Bignor.—If at Amberley Castle, you will save time and a long walk by making for Bury Ferry over the Arun. If a geologist, you would be repaid by returning to the Houghton chalk pit, where you will have one of the best sections of the upper chalk formation, that is chalk with flint, in Sussex. Many of the scarcest and most interesting fossils, and the bones of saurians, pterodactyles, and fishes have been found here. On the opposite side of the river, in the Balcombe pit, we have the lower chalk without flints. This is also a valuable fossil pit.

Bury.—We have much to do at Bignor and must move on. Note the shingle spire of the Early English church. Do not these shingles, cleft from the heart of Sussex oak, well suit the weatherworn church? If you enter the church, notice the arcades built of chalk, a material once largely used in our older and larger Sussex buildings. The walls of grand old Parham House, four miles to the east, are built of chalk faced with stone. The vaulting roof of the Catholic Cathedral at Arundel is also chalk. Query, why should chalk be not more frequently used by modern Sussex builders?

The White Horse Inn.—White Horse and White Lion Inns are numerous in our district, for the White Horse is the sinister supporter of the Howards of Arundel Castle, the White Lion the dexter supporter. We soon pass the foot of the road over Bury Hill—congratulate yourself you have not to climb it. On its top the army of the Parliament passed the night ere it moved on to the attack of Arundel Castle.

Note that pretty building at the junction of the roads. We have here the Workmen's Club Room, with its covered skittle alley secured to them for ever by an Act of Parliament. All honour to Mrs. Currie, of West Burton, a mile ahead, a tithing of Bury, and



"West Burton Mill-wheel."

since a perfect nest of Sussex gentry. Yes, we are indeed overshadowed by the hills, and a day or two would be well spent leisurely taking the roads through the little villages nestling as it were in their shadows. "It commands a boundless view," quoth an auctioneer's puff of some property for sale at West Burton. "Yes," wrote a wag across the bill, "but where the view can be, except upward, I cannot imagine.

At West Burton, ask for the path through the fields to Bignor. Before we inspect the pavement we will climb the hill.

The climb up Bignor Hill, from Mr. Tupper's house, stiff work for the first ten minutes; now we reach the easy gradient of Stane Street, the Roman Road from Regnum (Chichester) to Londinium (London). Search the downs for miles, and you will not find an easier descent. The hill top reached, to Mr. Editor has been left the pleasure of doing duty as nature's showman, and well has he performed it. Hard matter of fact is the province of the notes.

And, first, where are we standing? On the South Downs. (S.-A., *dûn*, elevated land). Far in the distance are the North Downs. Between these ranges of chalk hills is an undulating valley composed largely of clay, and, because of the forests which once covered it, called the Weald. Between us and the North Downs is a ridge of much less elevation termed the Forest Ridge. Look southward, the hills and the valleys gradually resolve themselves into level gravelly and loamy grounds, which extend from Chichester Harbour to Brighton, some of the best farming land in England. See on your left, one of the four rich alluvial plains of our Sussex rivers, in this case the Arun.

To commence a geological lesson would be absurd, yet it may be that some who are listening would feel that we neither underrate their knowledge nor try their patience by what we venture to say.

Let us make a rough diagram. A line shall represent the chalk on which we stand, below the line we will place the names of the various formations as low as the Wealden Clay, all formed before the chalk. Above the line we will place the names of the formations placed one on each other above the chalk.

Eocene
- Rich agricultural loam.
- Sands.
- The London clay.
- Plastic clays.

Chalk.

Secondary
- Upper greensand.
- Lower greensand.
- Wealden clay.

In the N. and E. the Hastings Beds.

We need not tell you that these formations do not now lie as smoothly and regularly as when laid down in their respective geological periods.

Look northward again, across the valley bounded by the north downs. What has become of the chalk? Geologists differ, but we have good authority for supposing that Nature's forces of elevation and denudation and the action of the waters of the estuary of that mighty river which drained a continent then existing in the north and west have given us this wealden area.

Geological ages roll on, and the "Recent Period" gives us the present Wealden formation, covered with a vast forest in which roam the Celtic ox and red dear, the brown bear, the wolf, and the wild hog. On the hills the natives—at how early a period and how long since we know not—shelter themselves in their hill fastnesses which abound on the downs, which gave them pasture for their cattle.

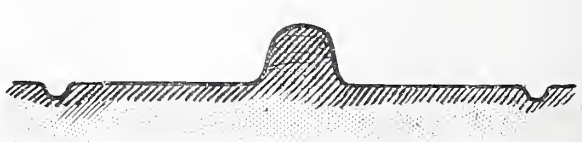
But we climbed the hill to realise the old Roman road. Here we have it almost as perfect as when the Roman soldier left it. Look at our illustration—a central mound, the Vallum, some ten feet above its surroundings—on each side a stoned road some five feet high, then, bounding each side road, a very shallow ditch, from which, perhaps, the material was taken to form the central vallum.

On this central vallum two soldiers could walk abreast, and keep a good look out. Possibly also it gave shelter to those marching on the lower roads.

Stane Street, in our excursion district. We must adopt the note form. See map, East gate of Chichester, Westhampnett, Halnaker, through the wood country, Northwood, Bignor Hill—a vicinal or branch road to the villa—the main road straight on to Watersfield, Coldwaltham, Hardham, and the south end of Pulborough Bridge, where it leaves our excursion district.

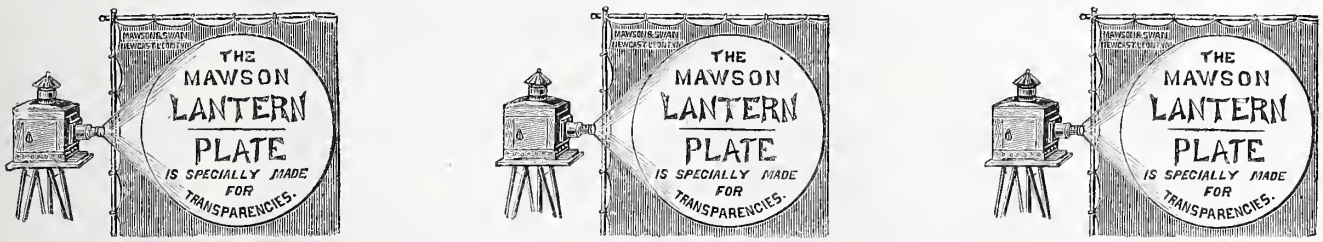
The Roman Pavement.—Little is known of the substructure of Roman houses. The walls possibly were only raised a little above the foundations to support a superstructure of wood. The Roman villa was an establishment of great extent, having large courts, around which the buildings were grouped. The pavements of Woodchester in Gloucestershire and Bignor are rivals. The villa at Woodchester covered a known area of 550 ft. by 300 ft. That of Bignor covered 650 ft. by 350 ft.

Who built it? Mr. Lysous thinks some Roman official who governed in the reign of Vespasian, about A. D. 79. Its outer struc-

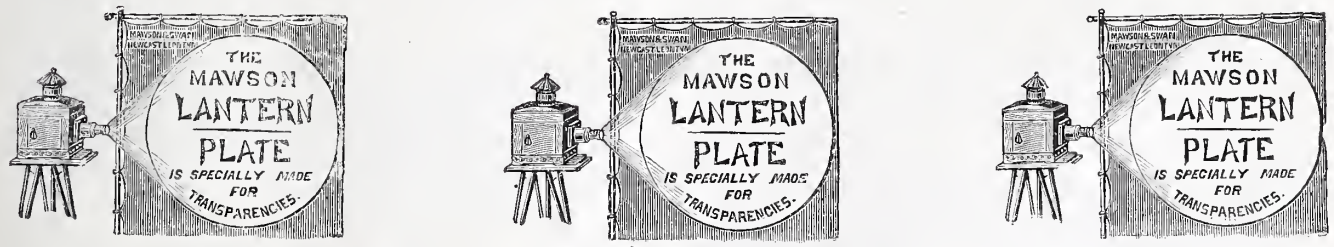


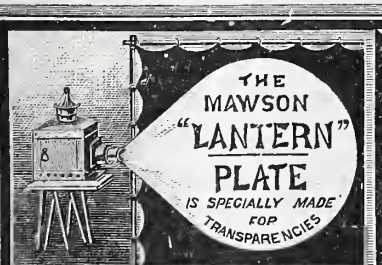
tures, suggesting barracks or guard rooms for soldiers, prove that its builder was a Roman official of high rank, who selected "Ad Decimum," the tenth Roman milestone from Regnum, as a suitable site for a station, "just as a modern railway lord procures a station in the neighbourhood of his own residence."

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Detailed description must be left to Mr. Tupper, who has charge of the Pavements; but we will give a general idea which may be helpful. This villa evidently had an inner court which was nearly a rectangular parallelogram. Surrounding the court was a cryptoporticus or ambulatory, ten feet wide, with a beautiful tesselated pavement, in which exercise could be taken in all weathers. The chief apartments were on the N.E. side of this court, and opening into it. In the S.W. corner were the baths and sudatories. The outer court was much larger than the inner, and seems to have been surrounded with bare walls. The walls of this outer court doubtless surrounded the whole edifice, which, perhaps, externally presented merely the appearance of a great, irregular square-walled enclosure.

A very charming walk may be taken from the Pavement, through Bignor Park to Fittleworth Station. Bignor Park was one of the ten parks appendant to Arundel Castle, and was used for fattening deer brought in from the forest, the venison of which was salted down and dried for the lord's winter supply. The chancel arch of Bignor Church is said to have been an arch from a Roman building. Notice the two fine yew-trees in the churchyard. A very interesting old English house in the village should on no account be missed. Ask to be permitted to inspect the interior.

Pass on through Sutton to Burton—a most interesting walk which should not be hurried over. Another White Horse Inn.

Five Saxon Thanes held it as a free manor before the Normans came; then it passed into the hands of the great Sir Roger. Later on we find that one Peter de Sutton held ten librates here by the service of furnishing a sparrow hawk to the king, and another one, Falco Basset, other lands by that of certain furred gloves.

Burton Mill.—You will not wish to hasten; a long afternoon will seem none too long to rest and wander, wander and rest. You are not in the humour for dry facts? Nevertheless, let us offer just a few. First, the Mill. Domesday tells us that a certain Robert paid for it a rental of eleven shillings. There is little doubt that every water-mill now in Sussex stands on a Domesday site, and that the Sussex peasant of to-day carries his corn to the identical spot his ancestor, the Saxon, carried it a thousand years ago. Mills then belonged to the lords of the manor, and only his tenants ground at the mill. Why does Domesday give by far the largest share of water-mills to West Sussex, when East Sussex has abundance of mill-streams? Mr. Lower's reply: "Was not West Sussex more advanced in civilisation than East Sussex, whose peasantry were fain to content themselves with the primitive household querns? A feather in your cap, West Sussex!

The mill pond with its fish, the dove-cot, the rabbit warren close at hand, were essentials in those days, when the diet of the poor was almost wholly coarse rye bread and salted fish, and when fish, pigeons, and rabbits supplied those who were somewhat better off with fresh meat. Some of the Sussex dove-cots are firm brick buildings; one which belonged to the Priory at Lewes was cruciform, looked like a church, and had 2,500 cells. The rent of this mill-pond was 280 eels.

Our space has run out; we cannot take you to Burton Church. That visit shall be reserved for our Petworth day. Why were yew-trees first planted in churchyards? This question is asked by Mr. Lower in his charming "Contributions to Literature." I hesitate to spoil Mr. Lower's reply by the process of "notification," but I do so with the earnest request that you will place the "Contributions" on your bookshelves and revel in his chapter on the "South Downs."

Reply No. 1.—To find the wood for bows in the old archery days. Nay, the religious feeling of the age would not have permitted such desecration. How old must the yew-tree be to supply the wood? And what of the appearance of the mutilated tree. *Reply No.* 2.—As a shelter to the church. Which would grow older the quickest, the church or the yew? *Reply No.* 3.—It was a tree in special esteem with the Druids; it has been held by all nations as sacred to funereal rites; in later times its evergreen foliage and great longevity became the symbol of that world without end which is the ultimate aspiration of the Christian soul.

(*To be continued.*)

CHENIES AND LATIMER.

By H. Harris.

A journey of fifty minutes by Metropolitan Railway from Baker Street brings one to Chorley Wood Station, the cost being about two shillings for return ticket. Leaving the station, turn to the left and go up the hill for about a mile, then to the left for half a mile, and the village of Chenies will be seen on the right. Pass the "Bedford Arms" and the village pump to the church. Here will be found the mausoleum of the family of the Dukes of Bedford, with many handsome monuments. The key is kept by an attendant who lives in the Manor House, the first door near the gate. Permission to photograph is not given.

The Manor House should be taken as early in the day as may be from near the churchyard gate. This gives a view of the whole length of the remaining wing of what was once a magnificent building dating from the Stuart times. Turning back past the schools and then to the right, one reaches the back of the house, and a view (afternoon light) can be taken of the north end of the wing, showing the finest groups of the chimney-stacks of rubbed brick which are such a characteristic feature of the house. On the green stands the famous Queen Elizabeth's Oak, still vigorous after an existence of at least eight hundred years. The trunk is hollow, with a girth of upwards of forty feet, and the branches cover an immense area. In spring, before the foliage is out, this makes a good picture; but perhaps in summer it would not be so successful.

Returning to the village, some very picturesque cottages in black and white may be taken.

A pleasant walk along the high road, with the Chess flowing below on the right, leads in about a mile to the turning for Latimer, which crosses the stream by a ford and plank bridge near a "water-splash," which makes a picture. A path to the right through a meadow leads to the ruins of Great Flaunden Church (150 yards), which may or may not be thought worth a plate; but there will be no doubt about the cottage close by.

Returning to the road, another path across the meadow on the left will give a pretty river view. The village has several fine old cottages, but the best of all is close to the church, and is a perfect maze of gables and corners, the whole luxuriantly covered with climbing plants.

The church is a good specimen of the work of the late Sir Gilbert Scott. From the church the road leads round by the front of the Manor House (which is grandly situated, but too distant for an ordinary lens), and down to the high road, which was left at the ford. Just opposite the gate is a footpath which will take one to Chalfont Road Station in about twenty minutes.

A short day spent in following out the itinerary here given cannot fail to repay the amateur, who will venture to trust the writer's experience and good faith; but to prevent disappointment in one respect it should be added that no refreshments can be obtained after passing the "Bedford Arms" at Chenies; therefore, if lunch be not taken there, a modest supply should form part of the impedimenta. A dozen plates will be found not one too many for the trip.

A FORTNIGHT BY THE THAMES, WITH A DAY AT STRATFORD AND KENILWORTH.

By Henry Irvine.

In May of last year I spent a fortnight by the Thames, making my headquarters first at Great Marlow, and then at Pangbourne. Leaving London in good time, a few hours were spent at Windsor. Arrived there, information was speedily forthcoming that the camera is a forbidden instrument in the streets of the royal borough without special permission. Photography, however, is not forbidden in the Long Walk. A view of the castle entrance was taken from there, led up to by the avenue of stately elms. A plate was also exposed upon the elms themselves, but the halation difficulty cropped up here on development. The best view of the Castle apparently was to be obtained from a field by the river bank called "The Brocas." Here the magnificent pile of buildings was seen across the river to advantage.

Great Marlow is a quaint old town making a good centre, and providing many points of view interesting to a photographer. There is a pleasant view of the church, the suspension bridge and weir, from the lock. The river in the neighbourhood of Great Marlow has many beautiful stretches, and little bits meet one at every turn. The walk is one which well repays from Marlow in the direction of Bourne-end. A visit to Cookham is not to be missed, with the lovely Cliveden woods massing from the water's edge in a steep cliff of foliage. The Ferry cottages west and east of these woods lend themselves admirably to the scene. The day was one of the most brilliant, and it would be difficult, either by words or by photography, to give fair representation of the quiet glowing beauty, with the glorious background of wood clothed anew in the beauty of the spring greens, and with the strong dark flow of the river beneath. From Great Marlow up the river to Medmenham and Hambleden are many opportunities for getting pictures.

After a week at Marlow I went on to Pangbourne, staying an hour or two at Reading in order to visit the celebrated biscuit factory of Messrs. Huntley and Palmer. Pangbourne in May was blessedly quiet, though in the season it is so thronged. Here are some lovely walks with more variety of scene than is perhaps to be found elsewhere along the Thames, the country being more hilly. The lock, with the pretty hotel, viewed from across the backwater, makes a charming picture. Above is a fine broad stretch of river which would yield many boating bits in the season. Goring is a pleasant spot a few miles to the west. The church from the bridge, a Norman building composed of chalk, flint, and rubble, standing directly on the mill-stream, makes a pleasant picture with the

house adjoining, and with its wall down to the water overhung with creepers and with the hurrying water of the mill-race below. Another excursion is down the river to Mapledurham Lock, where I found the lock-keeper strongly interested in my movements, and willing to render me every possible assistance; the lock cottage, the weir from either bank, the old mill, the church, the church and mill combined, each demands its plate.

After leaving the Thames on my way homeward, I resolved to get a day at Stratford-on-Avon and also at Kenilworth. Several photographs were secured at Stratford, including Shakespeare's house, and the memorial theatre. Time was all too short and the day was not very favourable, something between rain and mist, but the best had to be made of it. On to Kenilworth the day had brightened, and a few pictures of the famous ruins were secured.

The Desirability of an International Bureau,*

ESTABLISHED (1) TO RECORD, (2) TO EXCHANGE PHOTOGRAPHIC NEGATIVES AND PRINTS.

By W. JEROME HARRISON, F.G.S.

THE international photographic survey of the heavens has now been in progress for six years, some thousands of negatives of the stars have been obtained, and when this survey is completed, the present face of the sky will be known with an accuracy which the astronomers of a pre-photographic age never dreamt of; and which will possibly enable the structure of the universe to be worked out; or at all events will afford a means of detecting the changes which we now know so frequently occur in the heavenly bodies.

But is not a photographic survey of the *face of the earth* at least as important as that of the celestial sphere?

Even such physical features as hills and coast lines change slowly but surely; the influence of man upon nature brings about far more rapid changes in the face of every country, while the successive generations of mankind pass away and leave but little more record of their physical peculiarities than the waves which beat in turn upon the seashore.

I have advocated a systematic photographic survey of the British Isles for many years, and the details of my scheme will be found especially in two papers:—

(*a*) "Notes upon a proposed Photo-Survey of Warwickshire," read before the Birmingham Photographic Society in December, 1889. This was printed in the journals, and a thousand copies in pamphlet form were sent to all the photographic societies in the British Isles and in America.

(*b*) "Proposal for a National Photographic Record and Survey," read before the Photographic Society of Great Britain in May, 1892, and also printed as above.

In these papers the idea advanced was that in the British Isles the photographic societies of each *county* should band themselves together to secure, by the aid of photography, a more or less complete record of the physical features of each country, its fauna and its flora; of its architecture and archæology, and its ethnology, etc. The aid of the leading men in science, literature, and art in each county was to be invited, who should be requested to furnish lists of places, persons, and things worthy of being grouped together to form this "True Pictorial History of the Present Day." As a unit of work the sheets of the excellent ordnance survey map were taken. These sheets are on the scale of six inches to a mile; each sheet or map includes six square miles; upon them is marked every house, field and tree.

One or more sheets of this map may be allotted annually to each photographer who expresses his willingness to take part in the task.

This photo-survey work is now being actively prosecuted in about eight English counties. In most cases the local free libraries and museums have been selected as the best places in which to deposit complete sets of prints. In the case of each of two counties (Warwickshire and Glamorganshire) the number of mounted prints of local places, etc., handed over to municipal authorities during last year (1892) exceeded one thousand in number.

It is greatly to be desired that this systematic survey work should be extended largely, both in England and in America.

It supplies a definite and useful object both to each photographic society, and to each and every member of such societies. In the British Isles we have now nearly three hundred photographic societies, and in the United States about two hundred.

There is no reason, however, why the "unattached" workers—men who belong to no society—should not also lend active aid in the work.

That such survey work will be continued and will prosper is obvious; but it seems a great pity that the results secured should be confined to the locality in which they are produced. And the main object of this paper is to point out how the usefulness of the scheme might be largely extended.

In each country there should be some central place—the British Museum, for example, for the British Isles, and the Smithsonian Institution for the United States—where a *record* of all negatives should be kept. This record should be limited to negatives (*a*) of good technical quality; (*b*) of local interest. A complete set of the prints from these negatives would also be stored at each of these centres. Such prints might either be furnished as gifts by the producers of the negatives, or they might be printed by the special staff of the central institution. They should be in either carbon or platinum.

As the workers in the majority of cases would be amateurs, it is probable that they would not object to handing over the negatives themselves to such central institutions; the negatives could then be stored in fire-proof and damp-proof rooms, and could be printed from by a special staff as desired.

Printed lists of negatives added annually should be published and should be widely circulated among free libraries, museums, etc. A complete set of the prints should also be exchanged annually between the two great centres; one on each side of the Atlantic. It is certainly lamentable to consider how many thousands of valuable negatives are wasted annually for want of any method for their preservation and publication. Moreover, the establishment of some such scheme as is here advocated, would lend an incentive to steady work by supplying an "object;" and this is just what nine out of ten of the great and growing army of amateur photographers stand in need of.

And as each earnest worker "joins the majority," it would certainly be satisfactory to think that his store of fine negatives—accumulated at so much expense and with such pains—would be preserved and used, instead of being wasted and lost, as is at present almost invariably the case.

EXCHANGE OF PRINTS.

Every donor of negatives or of prints might be credited with a certain sum (according to the number and size of his contributions), and he should be allowed to select prints to this value from the published lists.

The working expenses of the scheme might be derived from such sources as (*a*), grant from government; (*b*), subscriptions, the subscribers being allowed to select a certain number of prints in return; (*c*), sale of prints to the general public.

How many thousands there must be in the United States who would welcome the opportunity of examining the lists of British photographs which would be furnished to their local institution (library, or museum, or municipal offices), and of selecting therefrom pictures of the village, town or county from which they or their forefathers came; or of the places of which they read in history or in their daily paper. And we in England would many of us gladly hail similar opportunities of obtaining pictures of that wide land where our relations dwell, and of its wonderful physical phenomena.

Although such a scheme ought ultimately to be conducted at the national expense and by national institutions, yet it would probably be necessary to inaugurate the work on a smaller scale, so as to show its desirability and its possibilities. In England the Photographic Society of Great Britain is now endeavouring to affiliate to itself all the local societies; and if there is (or could be established) a similar union of societies on the American side, the matter could be negotiated between these two central institutions. Or direct relations might be opened up between societies of equal numbers (of members) and importance on either side of the Atlantic.

In conclusion the points to which I wish to draw attention are:

(1) In every county it is desirable that a photographic survey should be initiated. By the term "survey" I here mean a pictorial record of the state of things, physical and general, as now existing.

(2) In each country there should be (*a*), local depots containing complete sets of permanent photographic prints of the district; and (*b*), a central bureau containing negatives and prints.

(3) Facilities for the exchange (or purchase) of prints, etc., should be provided.

It has been well said that "all photographers are brothers," for it is certain that the study of this light science, though black art, tends to bring its fellow-workers together in no ordinary degree. Moreover, photography is more and more employed every day as a means of record in every branch of science and of art. It is of the utmost importance then, that the students of this subject, both in England and in the United States, should become acquainted with each other's work, and should be able to avail themselves of it. If this principle be once recognised and approved of, then the details by which it can best be carried out might safely be left to a committee appointed by the conference, should they see fit to do so.

* Read at the World's Congress on Photography, August, 1893.

Societies' Notes.

THERE are two open classes at the East London Photographic Exhibition, and the following are the conditions:—*Class E*—1. Only one print to be sent in for competition. All pictures securing a prize to become the property of the society. Unsuccessful pictures will be returned if accompanied with stamps sufficient to pay carriage. 2. Photographs may be printed by any process, or on any paper, but must not be printed on opal, or mounted in optical contact upon glass. 3. All prints must be sent in not later than October 10th, 1893. 4. No name must appear on the print, but the title must be legibly written on the front of the mount, and the entry form duly filled up and enclosed. 5. An entrance fee of 1s. must accompany any photograph. 6. Nom de plume to be written upon the back of mount. 7. The first prize will consist of a silver medal; second, bronze medal; third, certificate. *Class F*—Each competitor must send in six slides. Winning sets to become the property of the society. Sets not taking prizes will be returned if sufficient stamps be sent to cover carriage. An entrance fee of 1s. must accompany each set. The society will not be responsible for any damage done to slides in transit. The first prize will be a silver medal; second, bronze medal; third, certificate. To be forwarded not later than October 10th, 1893, to the Hon. Secretary, Walter R. Gould, 61, Gibraltar Walk, Bethnal Green, London, E.

Societies' Meetings.

Birmingham.—Ordinary meeting, 22nd ult., the President, Sir J. B. Stone, in the chair. The President distributed to the successful competitors the prizes and certificates gained at the last annual exhibition. In the course of a few well-chosen remarks he said that personally he deprecated the giving of any prizes from the point of view that it was almost impossible for judges, however skilled, to decide which were the absolutely best pictures, some being superior in technique, some in artistic feeling. Let photography be a useful record, not a mere striving after prizes. The President congratulated the members on the second Warwickshire Survey Exhibition now being held in the Corporation Art Gallery, and bade them continue with this useful movement.

Brixton and Clapham.—A meeting was held on 15th ult., the chair being taken by Mr. F. F. Buckle. Mr. Belton, representing the Paget Plate Company, gave an interesting demonstration on the printing-out plates and opals of the company. The special methods of printing, both by means of special and ordinary frames, were explained. As regards the printing, Mr. Belton said it was a daylight process, as the plates were very slow. The opals are of two qualities, matt and glazed. On the former the printing is done on the matt side, and on the latter on the glazed side. The process is precisely the same as for gelatino-chloride paper, but owing to subsequent reduction in the fixing-bath, printing should be deep, the rule being the colder the tones desired the deeper the printing. When using the combined bath for toning, the first washing may be dispensed with, but with separate baths the washing should be thorough, say in seven or eight changes of water. Density and colour must be judged by reflected light, it being remembered that prints dry darker and colder than they appear when wet. When finished Mr. Belton recommended mounting the prints under glass, as they are then less liable to damage from dirt. They may, however, be mounted and used as transparencies. Printing of lantern slides may be performed in an ordinary frame, and the judging of density will not necessitate the removal of the plate owing to the thinness of the film. At the conclusion of the practical demonstration several plates and opals having been toned and fixed in combined and separate baths Mr. Belton passed the slides through the club lantern, and the tones were very satisfactory. A vote of thanks was proposed by Mr. Dockree, seconded by Mr. Butler and carried unanimously. Mr. Levett attended for the purpose of affording hints to members requiring same. Next meeting, Sept 5th, Mr. W. H. Harrison: "Some Useful Photographic Standards."

Croydon (Camera).—The President, Mr. H. Maclean, F.G.S., conducted a party on 23rd ult. to Forest Row. The village, containing several picturesque cottages, was freely operated upon, also the neighbouring ruins of Brambletye. Kidbrook Park (by permission) was visited for the sake of its lake and rivulet. Wyche Cross and Ashdown were also inspected. A demonstration in composition was given by Mr. Maclean during the afternoon, the subject being "The Wood Workers."

East London.—General meeting on 22nd inst., Mr. Uffendell in the chair. Members' work shown by Messrs. C. Tylee, Pearce, Aldridge, and Smith. Mr. Bennett read a very interesting and instructive paper upon "The Desirability of Adapting the Printing Process to the Subject and Quality of the Negative." The lecturer illustrated his remarks with some prints, showing that what would make a good picture upon one kind of paper upon another would be an utter failure. He remarked upon the disappearance from the walls of the exhibitions of pictures printed upon the albumenised paper, and said that the imperfections and unstableness of the paper was the reason. He congratulated the present generation of photographers upon the advantage they have over those of the past, inasmuch that whilst the older generations only had the one process the present had an almost unlimited choice. He further said that the aim of all should be to portray as accurately as possible in the finished print the natural tone of the subject which forms the negative, for by so striving to this end we are distinctly upon the threshold of colour photography. In conclusion he said that the following maxims should not be forgotten:—Never print from a weak negative upon a paper which is adapted more particularly to one of greater contrast. Let your print be finished off in such a way as to harmonise with the subject. And, lastly, keep this well in mind, that colour, like distance, lends enchantment to the view, and only by a careful study of these several points can we attain to anything approaching perfection, and justify our claims (though by many it is disputed) that photography is an art.

Hackney.—Meeting held on the 22nd ult., Mr. Beckett in the chair. Mr. Roder showed a print he had toned, using carbonate of soda, but it was not clear. Mr. T. H. Smith showed some work done on Nikko paper, with which he was much pleased. Mr. Roofe had used metol and obtained plenty of density. Mr. Nunn complained of lack of colour in amidol. Mr. Miller, of the South London Society, then gave an interesting account of photographic mirrors, finally concluding with a demonstration of how to do it. For reversing work mirrors are very useful, and for zinc an absolute necessity. Mirror-making was best done in the daylight. The glass must be chemically clean, and ought to be optically worked. The bath must be under 60 deg., and distilled water alone must be used. The solutions used were 10 per cent. solution white loaf-sugar in distilled water, add to it 1-10th part ordinary alcohol and half per cent. nitric acid. Take 3 oz. of solution and add 4 oz. distilled water, and to this, in turn, 7 drams reducing solution made up of 10 per cent. solution nitrate of silver. Add, drop by drop, to bath mentioned until precipitate is formed, which redissolves by gradually adding ammonia; then add ¾ oz. of 10 per cent. freshly-made solution of caustic potash; then add more ammonia as before, and when cleared is ready for use. In twenty minutes glass will be coated, which must be first washed in acid, followed by distilled water and dried in blotting paper.

SOCIETIES' FIXTURES.

Sept. 1—LEWISHAM.—Discussion on Photographic Dodging, opened by Mr. Shodart.
" 2—BRISTOL CAMERA SOCIETY.—Excursion from Hotwells to Sea Mills.
" 2—PHOTOGRAPHIC CLUB.—Excursion to Sutton, Surrey.
" 2—WEST LONDON.—Excursion to Pinner.
" 2—MANCHESTER.—Excursion to Lower Pevver.
" 2—PAISLEY.—Excursion to Finlayston Policies.
" 2—RICHMOND (Camera Club).—Excursion to Godstone.
" 2—NORTHERN PHOTO. AND SCIENTIFIC ASSOC.—Excursion to Chingford.
" 2—GOSPORT.—Excursion to Bosham.
" 2—ROCHDALE.—Excursion to Middleton.
" 2—BOLTON.—Excursion to Whalley and Mython.
" 2—LINCOLN.—Excursion to Torksey.
" 2—ASHTON-UNDER-LYNE.—Excursion to Bakewell.
" 4—S. LONDON.—Lantern Evening, "Reminiscences of a few Eminent Men," Mr. F. W. Edwards.
" 5—HACKNEY.—Open Night.
" 6—PHOTOGRAPHIC CLUB.—Toning Baths.
" 6—PAISLEY.—Excursion to the Glen.
" 6—BOLTON.—Excursion to Whalley.
" 6—UTTOXETER.—Excursion to Shrewsbury.
" 6—ASTON.—General Lantern Evening by Members.
" 9—BRISTOL (Camera Society).—Excursion to Clevedon.
" 9—S. LONDON.—Excursion to Harrow.
" 9—MANCHESTER.—Ramble to Durham Park.
" 9—NORTHAMPTONSHIRE.—Excursion to Honiton and Cowper's Oak.
" 9—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOC.—Excursion to Hadley Woods.

To Correspondents.

All communications for these columns are to be addressed to The Editor "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6158. **Colouring Silver Prints in Water Colours.** What colony is best to seek?—Can any of your readers kindly tell me the best method to adopt to colour light prints in water colours? Likewise, will any of your travelled correspondents be good enough to inform me as to the likeliest of our colonies or possessions where there would be scope for a professional photographer?—G. F. J.

6159. **Matlock.**—Will any amateur join me in a three days' excursion to Matlock, starting Sept. 4th.—S. J. BARTON, Eastlaithgate, Doncaster.

6160. **Ross's Divided Camera.**—I should feel greatly obliged if any of your readers who use Ross's new portable divided camera would tell me what means they take to enable them to see the image on the ground glass. Even with the hood placed in position I find it impossible in a strong light out of doors to see the image sufficiently to arrange a picture.—E TOURIST.

ANSWERS.

6153. **Seascale.**—In reply to "Learner," he will find plenty to do, photographically, within easy distance of Seascale, although very little in the village of Seascale itself. Calder Abbey, Holmrook, Gosforth, Eskdale, Wastdale Lake, Ennerdale Lake, St. Bees, and Whitehaven are all within easy distance by road, rail, or coach. I do not think "Learner" will be able to obtain plates at Seascale, but they can be readily obtained by rail from Whitehaven, either Messrs. Wilson and Kitchener, or Messrs. Gass, chemists, pay great attention to amateurs' orders in the seaside villages round about.—CUMBERLAND.

6153. **Seascale.**—This is a charming, wild seaside resort, extensive beach and fine sea view, which are well worth a few plates. Calder Abbey (a charming ruin), St Bees, and Whitehaven, all within easy distance on one side; on the other Ravenglass; from there, in Toy Railway, through the Eskdale Valley, to the Stanley Ghyll, a lovely spot. Then there is Coniston Lake, Furness Abbey—all these easily reached by rail. A charming drive from Seascale to Wastwater, where a vast number of plates might be successfully used on the ancient church, the scars, the lake, mountains, etc., etc. Plates cannot be purchased in Seascale, but if an order was left at the post office (which is a general stores) before 6 p.m. for anything, it would be brought over from Whitehaven before 9 a.m. next morning. I shall be pleased to answer any question if "Learner" cares to write.—H. S. GROCOTT.

6153. **Seascale.**—This being rather a new place there may not be much opportunity for picturesque photo work, but there is plenty within easy reach, and there are grand distant views of the Cumberland mountains. Gosforth, Runic Cross, etc., about three miles distant by road; Calder bridge, and ruins of the abbey, four miles by road; St. Bees Priory Church and College, also the promontory of St. Bees Head, about eight miles by rail; and Wastwater, about eight miles by road to the foot of the lake, will all give work for the camera. Whitehaven (about twelve miles by rail) is a quaint old place, and at the pier and harbour would be found food for the hand-camera. An excursion into Eskdale by rail should not be omitted (about twelve miles), by Ravenglass to Boot. Stanley Ghyll Force, near Boot, over ninety feet in height, should be seen, and going further up Eskdale, grand views of Scafell, Bowfell, etc., open out, with the Roman fort on Hardknott. According to the "A.P. Annual," plates, etc., can be had at Whitehaven from F. T. Polman, and Wilson and Kitchen, King Street, and from G. C. Gass, 12, King Street, who has a dark-room, but I do not think that anything of the sort can be got at Seascale.—A. J. ADAMS.

6153. **Seascale.**—On the south-west coast of Cumberland, perched on the head of a low cliff, is a small group of houses, hardly important enough to be called a village, much less a town, to which has been given the name of Seascale. The finest and widest part of the Lake country is within easy driving distance, and the views from Seascale itself are full of wild—though it may be of somewhat desolate—grandeur. A tramp of six and a half miles will bring the visitor to Muncaster; Calder Abbey is but three and a half miles distant, and the fine structures and picturesque surroundings will well repay a walk. Wastwater, Stanley Gill, and Scawfell can be seen from here. On one side of the bay stands St. Bees Head (eight miles), with its dark-red cliffs, and on the other Black Combe, a range of mountains forming the southern point of Cumberland. About three miles from Seascale is the little village of Holmrook, where, if queriator is a fisherman, he will rejoice amongst the wily trout. The Scawfell Hotel and Beach House private hotel are comfortable.—D. H. W. PREEDY.

QUERIES UNANSWERED.

June 2.—No. 6102.
" 9.—Nos. 6106, 6108.
" 16.—Nos. 6109, 6110, 6111, 6112, 6113.
" 23.—Nos. 6115, 6116.
" 30.—Nos. 6118, 6119, 6120, 6121, 6123.
July 7.—No. 6128.
" 21.—Nos. 6131, 6133, 6134, 6135.
Aug. 4.—Nos. 6142, 6146, 6147.
" 11.—Nos. 6150, 6152.
" 18.—No. 6152.
" 25.—Nos. 6155, 6157.

EDITORIAL.

SCOTCH THISTLE.—The exhibition opens September 25th, and entries close on 14th. The Secretary address is 50, Great Russell Street, Bloomsbury, London, W.C. As long as the camera was not fastened to a stand we have no objection to its being supported.

H.—Perhaps your camera will not rack out far enough; the light should not have the slightest effect. There should be exactly double the focus between lens and picture, and also between the lens and plate. Want of contrast is merely a question of exposing and developing. Too often the fault is too much contrast. Shorten your exposure, or you might try giving various exposures on one plate, and then see which will on developing give you the best result.

ROUMANIA.—(1) Any subject and any instantaneous exposure. (2) We should advise the Zeiss, and if you can, one of No. 1 series. One lens can do all the work, though really a short, a medium, and a long focus lens is best. (3) The A camera is better workmanship, though the R camera is a good sound instrument, personally we should choose A.

H. PARKER.—Your work is up to standard. The stains are probably caused by the prints coming in contact with a metal somewhere.

HERR SCHULTZ.—(1) The lens you name would be very satisfactory, though of rather long focus which would sometimes be a disadvantage. We are not sure whether the lens is made of Jena glass, but think so. (2) The firm you name can be depended upon, and their camera is a well-made one. (3) We should say C, B, A. (4) No, we cannot recommend it.

H. H. WINSTANLEY.—Many thanks, but it would lose too much in reproducing.

ALPHA.—Yes, we should choose rapid plates; it enables one to stop down more, and use the shutter quicker. For sea and open views one tenth would not be too little, but for rivers and wooded banks it certainly would be, as the latter would require from 1 to 10 seconds according to position. You ought to have no difficulty in developing the plates.

H. M. S.—(1) Use glacial acid 1 oz., water to 10 oz., either with soda, potash, or ammonia. Bromide of potash has merely an antifogging effect, and the addition of a quarter grain to the ounce merely keeps the plate clean. (2) A ruby glass with ruby fabric should be quite safe, though we use a much brighter light, but then the lamp is turned away from the dish, and only occasionally turned round to see how things are going. Stick to the plates. (3) The metallic stain is iridescent or green fog, and may be due to stale plates, or some plates always give it with ammonia, and especially the plates you ask about; soda or potash will not give it so readily; under-exposure and forcing with ammonia is a very likely cause.

A. FOLKARDE.—Quite welcome to keep prints till 9th inst.

LUX.—The bar wants repolishing, and we should say that an ordinary ironmonger would do it for you, but Platt and Witte, Birkbeck Road, Ridley Road, London, N., would do it for you.

JACK.—Carry toning further, till on looking through the print all sign of red has gone, and make your fixing bath alkaline by adding bicarbonate of soda to it. The print would be seascape and river scenery.

J. HOARE.—We are very sorry you did not get the notes in time, it was that clerk again, and also to hear about your stolen plates, much good they would do the thief.

A. J. A.—No, so far as we know, the films of dry plates are not rendered slower by cold weather, no matter whether freezing or not.

BOTANY BAY.—(1) Saturated solution of hypo is an unknown quantity, which depends solely upon the temperature. Always make your solution a definite strength, as by using so-called saturated solutions you may get any and all strengths. (2) We should prefer to give half an hour's washing, because Messrs. Grundy and Haddon talk of thorough washing for ten minutes, and ours might not be so thorough as theirs; their remarks apply to albumenised paper, they did not extend their experiments to gelatino-chloride papers. (3) The only possible harm may be that some of the details would be eaten out by the strong hypo. (4) The spots are caused by air bubbles adhering to the prints, and the explanation of the different colour is supposed to be that some sort of toning action goes on under the air bubble, this is rather lame, but may be possible. (5) The line looks as though when changing plates a slight fog had been caused, and the straight line is the edge of the wrapping paper. The negative wants intensifying. (6) Yes, you must add something, either nitric or sulphurous acid, and if we wanted to make such a strong stock solution we should use 1 oz. of sulphurous acid. See "Supplement" this week for criticism.

G. F. B.—The lines round the negative, we should say, were caused either by the wrapping or separating paper, or else unequal drying of the emulsion or the negative. The negative is fully exposed and under-developed. Before expressing an opinion as to the spots, we should like to see them, as we do not know what they are.

KROC.—You cannot use ferrous oxalats with any other developer, though we are not quite clear yet what you mean. Will you answer these questions? (1) Does double developing mean, bleaching negative and redeveloping, or (2) does it mean applying a weak developer first and then a strong one?

H. S. GROCOTT.—You had better address a query to L. Nievsky, Findon Road, Shepherd's Bush.

E. MAUDEN.—(1) The best thing you can do to your fogged negatives is to reduce them with ferridcyanide of potassium. Soak them well in water, add ½ oz. of fresh fixing bath to the water, and a few drops of ferridcyanide of potash (60 gr. to the ounce), and rock the dish. The more ferridcyanide added the greater the reduction. (2) Cut a piece of tissue paper and paste the glass side of the corner of your negative, lay the tissue paper on it; when dry print and see if it improves matters; if not, use a little black crayon and a stump on the paper. (3) Soak your negative first in 10 per cent. solution of bromide of potassium, pour off and drain, then apply the pyro, which should be at least double the usual strength, and allow it to soak for half a minute, then add the alkali very gradually, using first one-eighth of the normal quantity, and add gradually, rocking well after each addition for a minute. You ought to get out a good negative in this way. In printing print very deep so as to show merely the outlines of things and the bright streak across the water. (4) We place as follows: D, A, C, B. (5) Before we can answer this you must let us know what price you will pay, and whether magazine or dark slides, whether it is to be used in the hand only, or on stand as well. You can rely on anything bought through our "Exchange" column, if we see it first. (6) The best method of treating over-exposed plates is that suggested in answer to No. 3.

A. P. O'BRIEN.—Do you mean that your plates are fogged and you want to expose them, or that they have been exposed and fogged afterwards, or that you have fogged negatives? Your query is not quite clear.

H. T. NORRIS.—You just omit to give the most important details. Use R R. lens at full aperture and any very rapid plate, like Cadett, Ilford, Barnet, etc., and to find the exposure you have not given us enough information, so you must do the sum. Calculate the distance between lens and cycle in inches, divide this by 100 times the focus of lens, divide the speed of object in inches per second by the result, and you will get the required speed of shutter. As an example we will suppose you are using an 8½ in. focus lens, and distance from cycle to be 15 yards. Then—

$$15 \text{ yds.} \div (8\tfrac{1}{2} \times 100) = 540 \div 850 = \tfrac{54}{85}.$$

An object going 30 miles per hour moves 44 ft. per second. $\therefore 528 \div \frac{54}{85} = 831$, so that your shutter will have to work at about $\frac{1}{800}$ of a second.

W. D. D.—The simplest test is with permanganate of potash—

Permanganate of potash	2 gr.
Carbonate	20 ,,
Distilled water	40 oz.

Half fill a test tube with distilled water and add a few drops of above till a distinct pink tinge is caused, then allow the water suspected to contain hypo, to drop into it, when if there is any present a green tinge will be caused.

GEO. ROBERTSON.—Many thanks for print; as you say, the camera was pointed too low down.

J. CLARK.—(1) We have not had any difficulty in obtaining density, though in many cases development has to be continued longer than with pyro. Try the following—

A.

Metol	45 gr.
Sodium sulphite	1½ oz.
Potassium bromide	5 gr.
Distilled water	5 oz.

B.

Potassium carbonate	50 gr.
Distilled water	5 oz.

Mix in equal parts for normal work. Both will keep. (3) The best formula is either to obtain Marion's fixing cartridges, or Andreeen's fixing salt, or else you can get Theonine from Marion's which you can use, or else make an acid fixing bath by adding ½ oz of citric acid to 2 oz. of sodium sulphite in solution and then adding this to a quart of 1:4 hypo solution. (4) Use a 10 per cent. solution of glacial acetic acid as a restrainer. We shall be very glad of prints, and unmounted, please.

TOKO.—The spots are due to metallic impurities of some kind in the water, or fixing bath coming in contact with the remains of the pyro developer. Use an acid fixing bath, or else filter your water carefully.

BEGINNER.—(1) Over-exposed and over-toned, and not improved by the artificial clouds. (2) Ditto. (3) Insufficiently printed and over-toned. We are sorry, but not up to standard.

The AMATEUR PHOTOGRAPHER

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

Our Views.—The Central Club—The Exhibitions—Selection and Survival of the Fittest—The Conference of Judges—The *Pall Mall Gazette* on Photography—Mr. and Mrs. Snowden Ward—The Queen's English—*Rod and Gun*—Polytechnic Classes—*Canadian Photographic Journal* Competition—Photogram *v.* Photograph.

Flotsam and Jetsam. By Anchorite.

Letters—A Protest (Arnold)—P.S.G.B. Exhibition (Chapman Jones).

Articles—Photographic Procedure (Wall)—Spark Photography (Smith)—Pictorial Photography (Wall)—Present and Future Possibilities of Photography (Vidal)—Carbon Printing (Cooper)—Sensitiveness of Photographic Plates (Hough)—Isochromatic Photography (Cramer)—Posing and Illumination (Estabrooke).

Holiday Resorts—The West Sussex Quadrilateral.

Appabatus.—Lund's Panoramic Albums—Thomas' Sardell Films—Curtis' Hand-camera.

Societies' Notes.

Societies' Meetings.—Cheetham—Hackney—Holborn—Liverpool—N. Tasmanian—Woolwich.

Societies' Fixtures.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 52, Hand-Camera Work. — Latest day, September 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, October 6th, 1893.)

We are happy to be able to announce that the executive of the Central Photographic Club have secured suitable premises at one of the best and most agreeable hotels in central London, namely, Coleman's Hotel (late Ashley's), Henrietta Street, Covent Garden, a building associated with the earlier days of at least two existent flourishing photographic societies. The rooms available for the use of members will include such as give the usual club accommodation of smoking, reading, meeting, and dark-rooms, and seem in every way well adapted for the purpose. Country members visiting town will have the advantage of securing hotel accommodation, as it were, on the Club's own premises, and certain obvious difficulties as to service of refreshments, tariff, etc., will be easily and happily overcome. It is expected that the premises will be available for the use of members in a few days. In the meanwhile the opening meeting of members and those intending to become members will be held at the Club, Coleman's Hotel, Henrietta-street, Covent Garden, on Wednesday, September 13th, at eight o'clock. This will constitute, as it were, the formal opening of the Club, and will give an opportunity for the amendment of the rules, necessitated by the abandonment of some parts of the original scheme, and for other business of a formal nature. Mr. George Mason is to be asked to take the chair. Intending members and others interested will be welcome. It should be said that the Hon. Secretaries are Messrs. W. Fenton-Jones, 12, King Edward road, Hackney, and C. H. Oakden, 53, Melbourne Grove, East Dulwich, to whom communications relating to the Club should be addressed.

The photographic world is getting over its holidays, and we shall soon be in the very thick of the exhibitions, Pall Mall opening the ball on 25th inst. Following close on this will be the Salon, Hackney, and South London.

We need not say that both Pall Mall and the Salon are looked forward to with no small amount of interest, and it is an open secret that both promise good exhibitions. At Pall Mall it is stated that selection will be rigidly enforced, whilst the Salon will be, as announced from the first, a good example of the survival of the fittest.

It is to be hoped that the conference of the judges, called together by the P.S.G.B., will bear good fruit, and that we shall have less unpleasantness than in past years over judges' decisions and exhibition matters generally.

A recent issue of the *Pall Mall Gazette* contains rather an amusing article on photography, which opens thus:—

"The transition of photography from a mere science to an art has been gradual. We are all familiar with the ancient album and the dear old-fashioned faces and gowns therein. There is the inevitable picture that was pointed to with pride as showing what a fat baby little Johnnie was before he had the measles, and the daguerreotype marking how much little Mary Anne resembled her aunt, before she had her hair cut; and there is the sickly-looking photograph of Uncle William before he cultivated his corporation and grew side whiskers. On one page a demure face, peeping between two rows of nicely-buttered side curls, prove that appearances are a delusion and a snare, for we all know the details of her elopement; and if she hasn't eloped she has committed some other offence to the family by refusing to tread the paths her forefathers trod, or laugh at the jokes her forefathers laughed at. And there is the picture of Willie when he was at the age when everything he wanted to eat 'would make him sick,' and everything he wanted to do was 'out of the question'—a peevish, fretful face bolstered on a brand new sailor suit, and to make everything life-like the photographer tangled him up in some impossible ship rigging, or sat him in a boat with an oar



EXTRA SILVER MEDAL. "THE HARPIST." *A. H. Chant.*

"Photography at Home" Competition.

as big as himself. Yes, they are very queer, the old photographs, but we all have to have them, like the whooping-cough or any other epidemic."

After a brief review of how far photography has advanced as an art, with particular reference to portraiture, the article concludes with a note which is worth recording:—

"The fashion of smiling to display a charming set of teeth is still with us, as one may observe by looking at the latest photographs on exhibition; but why one should assume the pussy-like 'I've-eaten-the-canary' expression passes all comprehension. The photographic smile and the 'look pleasant' are sadly in need of modification in many cases, and the art of naturalness in expression that our best artists advocate is something well worth consideration."

THE photographic smile certainly does want modification, though we venture to think that many amateurs are particularly careful to avoid the set smile and well-pleased simper so prevalent in many professional show-cases. There may be a danger of over-doing it, and we have been much amused by a series of portraits we have seen this week, by an amateur, in all of which a most lugubrious expression was prevalent.

MR. W. T. STEAD, commenting on "The Lantern Services for the Season 1893-94," in the current number of the *Review of Reviews*, says that Mr. Snowden Ward is at the "present moment in the United States of America taking to himself a helpmeet in the shape of the Editor of the AMATEUR PHOTOGRAPHER." We may possibly be permitted to state that this should read "the *American A.P.*," Mrs. Catherine Weed Barnes-Ward is now associate editor with her husband of the *Practical Photographer*.

THE *Morning* is responsible for rescuing from oblivion the following charming specimen of Queen's English, which we gather has been taken from a pamphlet containing instructions for a certain printing paper:—

"With this sensibilised paper, whose manipulation is easy and speedy, you obtain proofs giving vigour, depness and fineness. Warm hot-pressing, the proofs are more beautiful than those made with albuminised paper. Dry on an ebonite or ferrotype plate, it gives an enamelled surface. Dry on a depolish glass, it give a dead surface as nice as the platina. Everyway of virago in use for aristotypique paper can be utilised, nevertheless we recommand the combined virago. You can preserve it several months in taking care to keep it off from light and dampness, and carefully put it again in the pocket like we deliver it. Do not care of the slight yellow colour that can get the paper, because that desappear to the fixage." The "combined virago" is delicious.

THE grouse number of the sporting paper the *Rod and Gun*, is ornamented with four very good collotypes by the London Stereoscopic Company. At present the price of collotype work, except in very large quantities, is a little too high, or else it would be far more largely used than at the present time. It is, however, finding its way into general use for illustrating catalogues, guide-books, etc., and is infinitely superior to any process-block work.

MR. J. H. GEAR, who is tolerably well known as a very successful worker, has obtained a first-class pass of the Honours Grade in the recent City and Guilds technological and practical examination, and has been registered as a teacher in photography. In November he will hold classes at the Polytechnic, and will treat theoretically and practically of lantern-slide making and enlarging.

OUR contemporary the *Canadian Photographic Journal* has instituted a competition open to all amateurs, and offers some valuable prizes. All prints must be received on or before December 1st. Full particulars will be found in our Society Notes column.

WE note that the above-mentioned journal uses the word *photogram* instead of photograph as expressive of the print. This is, of course, on a par with the word telegram, cablegram, etc., and is possibly to be preferred. But we are very conservative, and photogram, like camerist, will be a long time before it finds its way into general use.

Flotsam and Jetsam.

THE "Sawbath" in Scotland is a dread institution. We knew it long ago from literature, with its dreary list of "Thou shalts," and its forbidding "Thou shalt not." But now actual fact comes to back up literature and to deepen the unpleasant impression. It seems that the Skye men are not exactly what

one would have expected them to be, from their place of habitation.

An amateur was there recently, and innocently thought no harm of trying to take a photograph of the town of Portree one Sunday morning. But to a Skye man looking on it was very much otherwise, and he expressed his disapproval by hurling a stone at the unfortunate photographer. Naturally, expostulation followed, but it only produced a threat to kick over both the camera and its owner.

There is a fine zeal for others about this that rather captivates one. It is wrong to take a photograph, so wrong that the gentle people of Skye even venture to peril their own souls by "heaving half a brick" at the misguided individuals who attempt such wickedness. It behoves all to be exceedingly careful who visit Skye.

This brings to remembrance the story recently told in this column of the tourist who was snapped one Sunday morning, in all his indignation, by a humourist who pretended to disapprove of his proceedings. The *Glasgow Evening News*, kindly commenting on the story, suggests a curious distinction as to what may and what may not be done on the Sunday in Scotland.

Printing off, it seems, is quite an allowable occupation, even for a Sabbath-respecting Highlander. But developing will never do. Why? Because it causes so much swearing! And, indeed, there need be no wonder at this. A glance at the word is enough to show the devil in it.

How many amateurs, we wonder, would manage to conceal a detective camera beneath their waistcoats? That is what the *Yorkshire Post* accuses them, or some of them, for it is conveniently vague, of doing. And besides this heinous crime, they are capable of taking pictures without being observed. Isn't it shocking? Indeed, indeed, the amateur must be "voted a pest."

Except at political elections. The *Post* makes that exception. He may then even do his country and the cause of honesty a great service. According to the *Post*, whose word cannot be doubted, he was so much in evidence at the Hereford election "that bribery and treating were understood to be unsafe." Conceive the camera as a moral agent, working in the cause of political purity!

But what are we to say of the camera in the hands of spies? Two Frenchmen have just been arrested at Kiel, in Germany, charged with spying out the German defences at Cuxhaven, Kiel, and elsewhere, while posing as innocent photographers. Alas for them, *mein Herr* has laid hands upon them, and they will not easily escape.

An evening paper which has been describing the hobbies and exploits of various M.P.s, tells us that Mr. Hoare, the member for Norwich, generally carries a Kodak with him, and finds excellent material to work upon in the Parliamentary police. Why ever does he not use it on his fellow members?

For instance, upon the participators in the melée in the House the other day. What would not one give for a sun picture of that? Or for a "shot" at "Lika Joka" when the MacNeill set upon him in the Lobby?

Anchorite.

Letters to the Editor.

A PROTEST.

Sir,—In your issue of September 1st I read with much interest your criticism of the prints sent in for the recent "Photography at Home" Competition. I note that you speak in high praise of five of my set of six pictures, to which the first silver medal was awarded. This is naturally very encouraging, but with all due deference, may I suggest that your criticism of the sixth print is somewhat florid and overdone? It is at any rate calculated to convey an erroneous impression. The subject was one which has been dealt with by the pens of distinguished authors, and is almost weekly produced by the pencils of able artists, being, in fact, nothing more dreadful than a 5 by 4 print, representing the head and shoulders of "'Arriet" out for the day. I strongly deprecate the inference to be drawn from your criticism, that photography may not be legitimately employed to depict every phase of human character. I also fear that your remarks have deprived me of the highly intelligent services of a model from whom I have in the past obtained character portraits of a nature sufficiently classical not to offend even the most sickly artistic sentimentality.—Yours faithfully,

J. O. Arnold.

[We did not for one moment suggest, or intend to suggest, that photography may not be legitimately employed to depict every phase of human character, but even though we do not lay claim to possess the most sickly artistic sentimentality we cannot help still holding the opinion that the subject was vulgar.—Editor.]

* * * *

P. S. G. B. EXHIBITION.

Sir,—Will you kindly remind your readers that Wednesday, September 13th, is the only day for receiving exhibits at the gallery for the annual exhibition of the society, and that they may be sent at any time up to September 11th to our agents.

Full particulars can be obtained on application to the Assistant Secretary, at the society's rooms, 50, Great Russell Street, W.C.—I am, yours faithfully, Chapman Jones (Hon. Sec.).

Photographic Procedure.

By E. J. Wall,

Author of "The Dictionary of Photography."

(*Continued from page* 107.)

Section X.

The process which I am now about to describe is one which I have purposely sandwiched in between Intensification and Reduction, because it happens to partake of a little of each. It will reduce the dense parts of a harsh negative and intensify weak parts, and is one which should be far more frequently used than it is. By means of this process it is possible to obtain a really decent print from a negative of a church interior which is almost a mass of halation.

It was suggested first by Eder in 1883. The negative, after being fixed and well washed, should be soaked in a solution of

Potassium bichromate	1 part.
Hydrochloric acid	3 parts.
Alum	5 ,,
Water...	100 ,,

In this the negative gradually turns white, and care must be exercised that it is thoroughly bleached from the back as well as the front. The negative must now be thoroughly washed in running water for at least two hours, or repeated soaking, film downwards, in frequently changed water for at least four hours.

The bleached plate may now be redeveloped, either with an old hydroquinone developer or with ferrous oxalate. This is the important point in this process, for development must only be carried on till the details in the shadows are fully developed, and not till the high lights are developed right through, or in the latter case no improvement will be seen. As soon then as the details in the shadows and half tones are developed, the plate may be rinsed and refixed. There being still some undeveloped chloride of silver at the back of the dense parts, this is fixed out, and the negative will be found by no means so hard as before.

I have stated that this process intensifies the shadows, and this is only strictly speaking true when the bleached plate is exposed to daylight for some time and then developed, the chloride of silver image then being converted into a more non-actinic character than previously.

Mr. J. McIntosh read a valuable paper on this subject before the North Middlesex Photographic Society, and which appeared in extenso in our issues of August 26th, September 2nd, 9th, and 30th, 1892. He says:—

"A few trials led me to adopt the following formula and method of working:—

Bichromate of potassium	10 gr.
Bromide of potassium	5 „
Water	1 oz.

"Bathe the plate and allow the solution to permeate the film. Pour the solution off and add to it five drops of nitric acid. Again flood the plate and the image will be converted into bromide of silver. Allow the action to proceed through the film. Bathe in three changes of alum to remove the bichromate and harden the film, and wash thoroughly in water. As the operations are carried out in white light, such as that of gas or a lamp, the plate is amply exposed by the time the washing is completed.

"For development I abandoned iron as being troublesome to make up when a single negative had to be treated, and had to be followed by a clearing bath before fixation. I tried hydroquinone as being something of the same character, but found that it frilled the film off the plate, whether the caustic alkalies or the carbonates were used. The previous long soaking would account for this. I then tried pyro, and found it quite suitable. Any preservative may be used (my favourite is nitric acid), but as there is nothing on the plate but the image to be affected by the developer, there is no necessity to use a bromide. A small trace may be useful to control development, but if any bichromate of potassium remains in the film it will unite with the bromide, and convert the image back into bromide of silver as fast as it is developed. The formula I generally use is:—

Pyro	2 gr.
Ammonia	2 min.
Bromide of potassium (if used at all)...	½ gr.

As the shadow detail lies on the surface it will first be developed, the half-tone will follow, and the high lights will remain white when viewed from the back of the plate for some time. As the surface of the film will veil over as soon as the developer begins to act, the progress must be judged entirely from the back of the plate. The only judgment required in the process is in stopping the development at the right time. If stopped too soon, the negative will be flat; if carried too far, the negative will still be hard.

"It will be well to have ready for reference a print from the negative in which the shadows have been printed to their proper depth. When the lightest half-tone which shows in the print is nearly but not quite blackened through by the developer, on viewing the plate from the back the action should be stopped, the plate washed and transferred to the hypo, which will speedily dissolve out the undeveloped silver in the high lights, leaving the negative much thinner in the high lights than it originally was. A little practice with waste negatives will give the required power of judgment.

"A negative which is hard from under-exposure, and one which has been fully exposed but is hard from over-development, will not present the same appearance during redevelopment, after rehalogenisation. If the former be redeveloped right through, the high lights will appear black at the back of the plate, the high lights in the fully exposed negative will never appear black, however far the redevelopment may be pushed, and as the layer of white-coloured silver present in this case will not be dissolved out by the hypo, an allowance for this must be made in redevelopment, or the negative will still be too dense. There is no theoretical objection to the negative being again treated by the process to obtain the required reduction, but in practice there is an additional risk of stains appearing the second time. It is better to err on the side of under-development and intensify if necessary.

"I found the method so successful that I should probably never have tried the chloride method again, and would have supposed it to be too uncertain for practical work. When, however, I was asked to make this process the subject of a paper, it became necessary to investigate the matter a little more closely, lest I should lead some one astray. By the experience I had acquired, I suspected the 'weak and well-restrained ferrous oxalate developer' to have been the cause of my early troubles. On rehalogenising a negative by the chloride process, I found that the exposure to lamp light was quite sufficient if developed with pyro, and the image all that was required. I would, however, in future omit the alum from the solution, and reduce the bichromate of potassium to 10 or 12 grains per ounce, and the hydrochloric acid to 5 drops. We have then two methods to work with, and though I think the bromide is a little more under control, this probable arises from my having had more experience with it.

"In this process, as in all others, great cleanliness is required, and the plate must have been thoroughly freed from hypo before proceeding to rehalogenise. If hypo or other chemicals be present, thin patches and dark spots will show. If there are grease spots or finger-marks on the plate, irregular action will take place. It is best to take but one trial print from the negative, and exercise great care in doing so if rehalogenisation be thought needful. When operating on old negatives I wash them gently with dilute ammonia to get rid of, if possible, grease spots before beginning the process."

I can only say that, in reference to Mr. McIntosh's method, I have tried it with excellent results, and it is easier than Eder's original method, though I have not met with so many difficulties as he seems to have done in using the hydrochloric acid and ferrous oxalate.

(*To be continued.*)

Spark Photography.

BY H. SMITH, F.I.C.

A MOST attractive field of study has been opened to all who are interested in rapid exposures by the wonderful results which have been obtained by Professor C. V. Boys in his recent experiments on the photography of flying bullets by the aid of an extremely rapid electric spark. Equally interesting also are the photographs of water jets under the influence of vibrating tuning forks, etc., which are so simply carried out that anyone who possesses or can borrow an electrical machine and a few Leyden jars may easily repeat them for his own satisfaction.

If a piece of glass tubing is heated at one end in a Bunsen burner so as to contract and form an aperture about the size of a small pin, and this glass tube is connected with the water tap by means of a piece of rubber tubing, a fine jet of water is produced when the tap is turned. It will be observed that although the water jet leaves the orifice of the tube in a smooth, unbroken column, it very soon breaks up into a glittering stream, and finally falls in widely scattered drops upon the floor.

In order to photograph the jet the tube or nozzle should be clamped or fastened near one end of the table in the dark-room in such a manner that the fountain may fall obliquely into a basin placed to receive the water. At the other end of the table are placed the electrical machine and a battery of four large-sized Leyden jars at a distance of about four or five feet from the fountain.

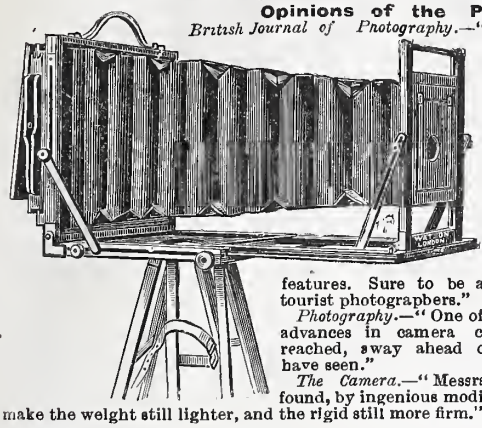
A tolerably rapid plate is now fixed in a position parallel with the fountain, and as near to it as is practicable, on the side remote from the battery. The Leyden jars are next charged and fired by means of an ordinary discharging rod, when the shadow of the fountain will be thrown sharply on to the sensitive plate by the light from the spark, which, being very actinic, gives quite sufficient exposure, although the duration of the spark is only about 1-10,000,000th of a second, as measured by MM. Lucas and Cazin.

On developing the plate the image will be found to be sharply defined, owing to the distance of the fountain from the source of light, and the picture is a very curious and interesting one. The water-jet, as it emerges from the nozzle, is seen to be first perfectly cylindrical, then a series of contractions occur, and these become gradually greater, until, finally, the jet breaks up into drops, which scatter more and more the further they proceed from the nozzle of the tube. So rapid is the exposure that even the vibration of the drops themselves may be distinctly seen in the photograph, particularly where they have just broken away from the cylindrical portion of the jet.

If now a second plate be exposed in a similar manner to the first, but with this difference, that just previous to the moment of exposure a small tuning fork, in active vibration, be pressed against the glass nozzle, a picture of a totally different character will be obtained. The water-jet is seen to break up as before, but the drops no longer scatter, they now keep in one patter, following each other at regular intervals, and if the experiment is carefully carried out, it will be seen that a large drop and a very small drop follow each other alternately with the greatest regularity, thus beautifully demonstrating the tendency of a liquid cylinder to break up in this fashion.

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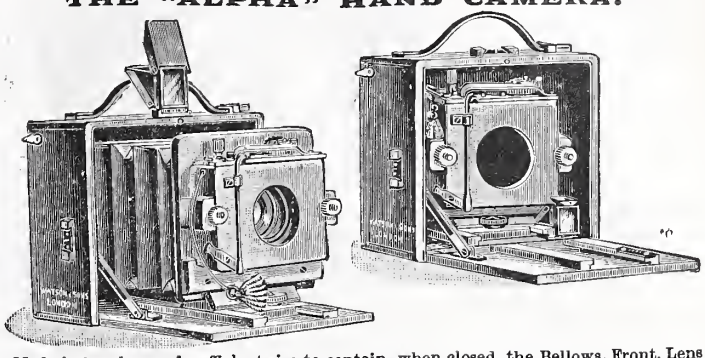
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Finder	0	10 6	0	10 6	0	10 6	Finder	0	10 6	0	10 6	0	10 6
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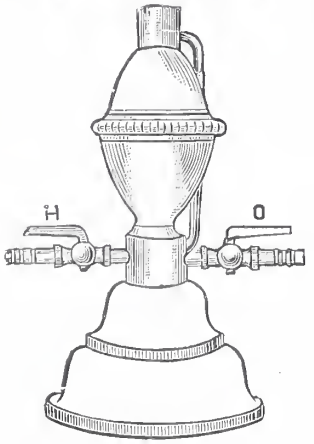
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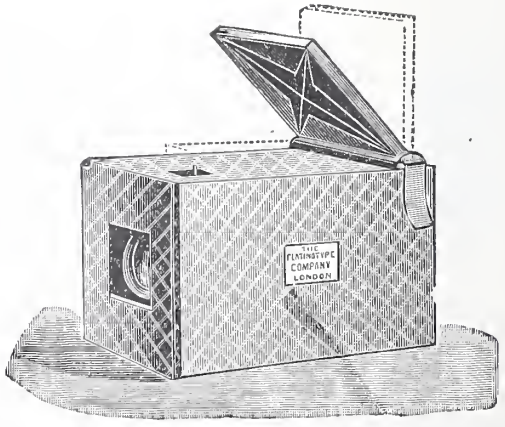
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Pictorial Photography; its Principles and Practice.

By A. H. Wall.

CHAPTER III.—THE COMPOSITION OF LINES.

(Continued)

But in addition to their other qualities as elements of pictorial composition, lines convey sentiments and feelings. Hogarth pointed out, while dealing with this subject, that undulating lines are more or less formed in all graceful movements executed with the intention of conveying sentiments of courtesy, respect, affection, or tenderness.

Follow the soft flowing lines of a beautiful woman's figure; see what harmonious combinations the gentle hollows and gradual elevations form. Her very bones are smaller and rounder or thinner than those of a man are, and their surfaces are smoother. It is as if Nature's own sentiments and feelings govern her creation, and are full of that tenderness and that affection with which the opposite sex instinctively regard her. Thus the great artist, Nature, enforces the lesson I am striving to convey.

What more beautiful than the limbs of antique female statues? Where will you find such a combination of gracefully tapering and swelling lines? disposed as notes of music are when they are meant to express tender, delicate softness, voluptuously passionate fulness, or in their changes elegant flexibility. How smoothly rounded is a young girl's neck and shoulders!

A woman's eyelids, if well formed, have the gentlest possible inflexions. The eyelashes, too, are most beautiful when they are long enough to take their outlines from the curve of her dainty cheeks.

How insensibly part mingles with part to make that perfect whole, the Medician Venus!

Seeking yet other illustrations to emphasise this teaching—Nature's own, remember—how beautiful in the pasture are the motions of a young horse curvetting or urged to his fullest speed by some playful, freakish impulse of its nature! Note with what ease and freedom it moves, the outlines of its movements being, if you note them, usually curvilinear.

See again the eagle soaring grandly and slowly upwards, its wings moving with easy continuous motions in an ascending spiral line.

Once again, how full of grace the curves of a river are when "soft flowing," as Shakespeare's Avon is, instead of with short abrupt turns, twistings, and angles!

What makes the contrast between leafy boughs gently swaying in measured cadence with a whispering wind, and those same boughs tossed violently and confusedly by some stormy blast? Is it not the expression given in the one case by quiet, gentle curves, and in the other case by abrupt, strongly marked changes of outlines?

If you seek to give your picture a calm, peaceful expression in perfect harmony with the general character of its subject, its outlines are powers strong to help, whether curved, softly flowing lines, or sharply angular one. If you want to catch the spirit of stormy clouds, and the rush of the angry blast, here are the lines to be avoided in your composition; they would only weaken the effect more or less completely in proportion to their number and prominence. If you wish to convey ideas associated with strength and vigour, avoid these graceful, tender inflexions of quiet outlines. If you wish to convey an idea of female beauty, grace, and delicacy, adopt them.

"Gracefulness," says that great apostle of the "sublime and beautiful," Burke—"gracefulness is an idea belonging to posture and motion. In both these, to be graceful, it is requisite that there be no appearance of difficulty; there is required a small inflection of the body, and a composure of the parts in such a manner as not to encumber each other, nor appear to be divided by sharp and sudden angles." Addison was strongly convinced that "the sense of sight is the only one that furnishes the imagination with ideas,"* and a picture is interesting or uninteresting in proportion to its power over the imagination, and the ideas it conveys. How well it does so every true poet knows. The ancient Greeks called the Muses "daughters of memory." All our mental ideas live and breathe in the memory because they are impressed upon it more or less powerfully by the imagination; either through the mediums of sight or hearing, or by both in combination. It is the artist's business to make his ideas harmoniously in keeping with his subject, to convey those ideas forcibly, that they may strongly impress the imagination. We come from hearing the work of some great musician. It lives in our memory. We come from seeing the work of some great artist, and come away convinced that it can never be forgotten. Why? Purely because of the power it exercised upon our thoughts and feelings as awakened by the imagination. To deepen these impressions and make them permanent, to create such influences and render them powerful, is the artist's business, whether he be painter, sculptor, poet, novelist, dramatist, musician, or photographer. Everything that can express ideas, as lines do, everything that can inspire you to imagine, as lines do, everything that can convey feelings, as lines can, must be as carefully studied as other branches of composition are if you would in any high, true sense of the name be an artist. If you are content to be a mechanic—I do not scorn mechanics—rest you, fair, kind sir, and let us part friends. I do not write for you, nor am I likely to be read by you. But do not pretend to be what you are not—an artist.

"A strong imagination," said Voltaire, "explores everything to the bottom; a weak one skims the surface" (our fashionable novelists are just now illustrating this fact). "The placid one reposes in agreeable pictures, the ardent one piles images upon images. The first would find delight, as the Greek sculptors did, mainly in graceful curves and a grand simplicity of linear treatment; the other would revel in more changeful and varied subjects, and adopt in his compositions a richer diversity of ideas and treatment.

To speak of the imagination as something within the province of the photographer will to some folk who have given no thought to it in connection with picture making appear absurd. But I have written so far to very little purpose if you have not recognised its importance to your work, the uses you may make of it, and the principles which underlie its practical application.

If by selecting a different view-point, or the time of day, or the atmospherical condition, or by moving the camera, you change the lines of a landscape, as you can, or in selecting your subject choose it with reference to its lines and their influences, you are composing a picture. If by the pose of a figure or the arrangement of its draperies and the selection of accessories and background you may secure lines the expressions of which harmonise best in sentiment and feeling with those natural or desirable to your model, you are composing. If some lines will awaken one class of sympathies, and other lines another, and you find one available of two, the subject selected being in harmony with that one and antagonistic to the other, then the artistic power of composing which you have is in no sense, inferior to that which other artists working with other tools through different mediums have. If the beginner in photographic art-study has realised that, I have ample reason for being satisfied and pleased.

This study of nature while in search for its more picturesque

* It will be seen by what follows that I regard the imagination as subject also to other influences.—A. H. W.

aspects will not increase the number of your negatives. You will, as we go on, reject what you have often before accepted as excellent subjects. You may even wander about an entire day without exposing a single plate; but after all, how short is the time you give to the camera compared with that the painter gives to his easel, or the sculptor to his modelling! "Fewer and better" should be your motto; aim high and you will not always hit a mole-hill.

How beautifully Shakespeare sees the association of one thought with another through the imagination—

> "That strain again—it had a dying fall.
> O, it came o'er my ear like the sweet south,
> That breathes upon a bank of violets,
> Stealing and giving odour."

Here we have music suggesting the descending curves of a line, the soft, sweet, faint sound of Zephyrus winds, and the silent beauty of perfume; all differing, but all in harmonious relationship, and quite perfect as a piece of artistic composition. How many pictures you may find in a gallery of eminent paintings that in like way appeal to sight, ear, and touch, suggesting movements and sounds, giving to things unreal a kind of reality by the means of associated ideas! Here is another illustration from Shakespeare, showing how, with even very slight resemblances, of two ideas one will forcibly suggest the other.

> "My wind cooling my broth
> Would blow me to an ague when I thought,
> What harm a wind too great would do at sea!"

In pointing these things out, I do not pretend to "write dull receipts how poems should be made;" I want to inspire you to study general principles, and to apply them in your own fashion. I want you to remember that a photograph that makes no impression upon the thoughts and feelings, conveys no associated ideas, warms the heart with no sweet fancy or touching sympathy is not in any true sense of the word what it might have been, a work of art. Cobbet said truly when he wrote, "One hour spent in soberly looking into the nature of things, is more likely to make men act with good sense and with effect than whole years spent in clamorous railing." This is true of the nature of outlines. It is easy to abuse photography, and speak scornfully of its productions and producers—justifiably too—but it is better to show the right way and leave the wrong one to prove by contrast its own inferiority. There is less chance of your treading on somebody's corns.

(To be continued.)

Present and Future Possibilities of Photography.*

By LEON VIDAL.

To render an account of the present state of photography presents no difficulties whatever, the facts to its credit being recorded everywhere, so that we need only draw from recent sources, the very ancient facts being, so to speak, contemporaneous, in order to trace a complete history of photography up to the present hour, passing in review all its methods, all its countless applications.

And while we are desirous of justifying the very title of this paper, the circumstances allow to foot on the past, admitting it to be well known to all of us, in order to arrive at a conclusion as to future possibilities which we are able to foresee, combining the progress of photography itself with the science of to-day.

We are witnesses of a scientific progress so continuous and wonderful, that it would be rash, indeed, even if aided by the most exalted imagination, to indicate the more and more extraordinary facts, reserved to us even by the nearest future. New discoveries in the domain of general science will, without fail, result in unexpected photographic inventions, or in applications of photography to uses of which at the present time not the slightest idea can be formed. This is why we cannot approach the difficult subject which has been referred to us, without a strong sentiment of our complete inability; in other words, this is a new world, inaccessible, which we set out to explore; we would have to give proof of the fervour of our imagination, of a kind of foresight, more than of true science. We would be well inspired if we could embark on a journey to the beautiful land of dreams to talk with the fairest fairies, and would return to describe our visions and to explain the most fantastic and most wonderful facts, while now we are obliged to appeal to reason—to the reason of to-day—it may be well understood, for our reason changes its basis at every moment according to the conclusions it has to draw from evidence and facts which yesterday it denied and thought wholly impossible.

But enough of philosophical contemplations, to which, however, we were prompted by a prudence which every one will appreciate.

Being thus under the protection of the unforeseen, we may now venture suppositions as fantastic as possible, and become prophets without much merit of our own, since the past serves as guide in discovering future possibilities, which, hypothetical as they are, may be admissible, because it has been shown that we need not doubt anything in the course of scientific facts.

The past belongs nearly exclusively to Monochromy, designating thus any method which by the aid of light produces an image of only one colour, whatever colour this may be, and even images with more than one colour, obtained by the aid of Monochromy, each having its own colour.

The progress in this line has been very remarkable; especially since the production of single images took the place of a multiplicity of copies.

First, the paper prints obtained by a chemical process from one and the same plate; then the commercial prints, obtained in a mechanical way with plates prepared with the aid of light, have made photography one of the most ingenious and faithful auxiliaries of the art of illustrating all kinds of publications; in one word, the automatical means of copying the most wonderful and most instructive objects which have ever been imagined. On the other hand, the considerable increase of sensitiveness of the products exposed in the camera to the action of light, together with the invention of the dry film and the consequent portability and easy management, have caused an immense expansion of this art, which now, in every respect, is in the reach of all.

Science has, not less than art, profited by the progress of photography, which made it an indispensable aid for its most delicate researches. To prove this we only need observe the excellent and unsurpassed services rendered by it to astronomy, to physics, to the study of the infinitely small, to the rapid and complete registration of all phenomena of light and motion, even of the wonderful rapidity of the minutest organisms. Indeed, it is at the same time an eye and a draftsman. Like the eye, it is gifted with the highest rapidity of vision, so much so, that it sees objects as if they were stationary, though they are alive with miraculous swiftness. Ah! it even sees what is invisible to the human eye! The stars bear witness—which though unknown till now, have been discovered by the photographic eye in the depths of space, inaccessible to our most powerful telescopes. The reproduction of ultra-violet rays bears witness—which, for our power of vision, belong to the invisible.

As a draftsman it is unrivalled; for nothing equals the definition of the lines it traces, the accuracy of the endless details it reproduces, the truth of which is such that it has the force of the evidence of a witness. We may add that it is also an artist. Indeed, thanks to entirely successful researches, we are able to obtain impressions on the sensitive medium by the aid of light of all colours, in proportion to the degree of luminosity of the different colours. This progress was achieved but slowly, and now that it has become an accomplished fact and practically within the reach of all, it gains ground slowly; but this can be only a question of time. Since we are able to sensitize our products so as to render them susceptible to impressions of all colours—giving them a perfect orthochromatism—it must also be possible to render them more sensitive to one colour than to another.

This possibility of selection must lead to the production of monochromes corresponding to every one of the principal colours and consequently to the representation of the colour effect of an object or of nature, by superposition of the different monochromes, each having its own colour.

Therefore, photography, being the most skilful draughsman and lithographer and the most admirable engraver, is also a wonderful expert of colours. But it is even more than this; it is already the artist of entire pieces of art, producing by one single action the colours of objects, much as it impresses the sensitive monochromatic plate.

And what a really wonderful idea—we begin to trace on the sensitive film the true image thrown into the camera, with its reality of detail and of colours. And this is our present position.

* Read at the World's Congress on Photography, August, 1893.

The development during more than fifty years has been nearly completed, because we have succeeded in passing through all possible phases of the art of designing and of its applications, attaining even to the art of painting. We say "attain;" by which is not meant that we have advanced in the subject of colour-photography to a point which we did not gain in monochromatic reproductions.

The most characteristic name which might be given to the present epoch is that of a new era. We are on the threshold of the art of Polychromy. Indeed, in scientific applications the first step counts most, as perhaps it does in every other field. We have only to direct our attention to what is going on in the electric world, and then to proceed by analogy. There we arrive at a point at which even the most fertile imagination could not pass beyond the scientific wonders of the future, even if its flight would lead us into the most fantastic dreams. No doubt electricity, with its power, its invisibility, its enormous rapidity of propagation, will become an ally of photography to aid in the creation of unexpected wonders. Already they speak of plates exposed and developed by the aid of an electric current. Edison is at work to construct an instrument intermediate between the phonograph and his kinetograph, which will enable us simultaneously to see the motions of a person, to hear his voice, his words, put in immediate harmony with his gesture, his attitude, the play of his lips and eyes, etc.

This has not only been taken into consideration but can be realized—probably it is realized—at this hour. But this is not all. By electricity similar effects may be and are (why not speak affirmatively, since such is our opinion?) transmitted over a distance.

Thus, using the electric telegraph at the same time as telephone and as kinetograph, we will be able to communicate the complete effect of form, motion and sound to points far distant from the scene of action.

So far we have spoken of the form, which involves the idea of outline and detail of objects. Will a transmission of colours become possible? Will we be able to complete the characteristics of an object by communicating through the electric wire not only its outline, but also its colours?

Why should we not admit this possibility, extraordinary as it may seem? How to get there? This is the point which no one as yet knows, but considering the present state of our scientific resources, based on the divisibility of matter, it does not seem impossible that we may arrive at results of this kind.

Passing in review the history of development of electricity, are we not convinced that about fifty years ago no one would have believed a prophet of the future, foretelling all the present wonders of the spark?

We do not burn the wizards any more, at least in civilised countries, but they are still treated as fools.

Well! We can no longer denounce folly in view of scientific predictions of the most revolutionary character.

All we are allowed to say is this:

"*Who can tell? This may be very well possible.*" Thus we do not risk to engage in a dispute which sooner or later will be decided against us by the facts.

Speaking of the progress of photography which may be realised, we think at once of a higher sensitiveness, which would allow of instantaneous impressions even with the feeble light of interiors.

The sensitive product, or at least its vehicle, shall have the fineness of the collodion or albumen film.

The apparatus, perfect as it is, still shows an incessant tendency to improvement.

From the standpoint of expanding the field of photography until it reaches every home, the idea will always be an apparatus essentially portable, of small weight and volume, permitting us to photograph without being observed, and containing a number of plates of flexible films, sufficient for a large number of successive exposures.

The favourite of the future is evidently the flexible film or the very small plate, so that after a sufficient perfection of the rolling apparatus an endless ribbon may be advantageously substituted for a certain number of single plates.

The rolling device lends itself better to a rapid succession of new sensitive surfaces, but its operation must be made more reliable and easier. This evidently is a field for the future.

The future will find enough work in the development of photography, and persons who believe that very little is left to extend its field are badly mistaken.

Well, what is it, they ask? There is the question of colours and saving some perfection in details; that is all, isn't it?

First in regard to colours, it is by no means a small step forward to bring this branch of reproduction to that degree of perfection which we have attained in monochromes.

If such a great step *has* been taken, inducing us to believe in a possibility of reproducing colours, and proving that the means of direct reproduction of colours exist, it is not less true that all is done with a view of applying it to industrial uses either to obtain simply and easily direct prototypes from nature, or to multiply polychromes with the aid of these prototypes.

The very day this possibility is recognised and justified by facts, nobody will do anything but take polychromes.

But the perfect realisation of this hope will not come without extensive further researches. It will be necessary to conquer step by step, with the aid of successive progress, and no one is able to foresee how many years it will take us to arrive at the perfection of this process. Occupied with this most attractive study, we may ask what other applications remain to solicit our earnest endeavours?

Is it not surprising that so little has been done until now, toward employing photography in industrial decoration of ceramic and tissue? And besides we have everything necessary to pursue this line with success To the future, therefore, is left an application as important as useful, and we hope that this work will be accomplished in an excellent manner.

How long before the constables, policemen, and detectives will be provided with detective cameras, permitting them to add to their words as witnesses the proof of the crime and of the identity of the criminals?

Though we have now all that is necessary for this application of photography, so simple and useful, yet it remains still to be realised.

How long before we think of introducing into our schools and colleges the study of photography practical enough to enable each scholar of either sex to constantly use the pencil of photography, according to the lessons of the course pursued, for gathering all the souvenirs on their excursions and voyages?

If this could be done, the application of the photo-lens to certain functions would cease to present difficulties.

We have already sounded far, very far, into the depths of infinite celestial space by photographic investigations, but they are less applied to terrestrial or submarine uses.

Geology would find it advantageous to verify the symptoms of life in the depth of the abyss, aided by a photographic apparatus, combined with a magnesium flashlight, which may be lighted at a distance by electricity. The same might be done below the surface of the water, in depths which no eye has yet beheld, and thus an investigation of submarine landscapes, so to speak, would prove to be of priceless value to science.

We have not yet encountered any impossibility, and the well-known facts suffice to give immediate results of the highest value.

How much remains to be done in regard to the methods and nature of registration?

We cannot form an idea thereof.

Why, for instance, is not the portrait obligatory on the passport? What better proof that this *is* Mr. X who speaks to you, than the presentation of his duly executed passport bearing his picture?

On the train, at the hotel, at the public places visited by travellers, at the windows of the telegraph and post-offices, and of the banks, etc., every one appearing should leave, without his knowledge, the proof of his presence in the shape of an automatic, direct and permanent reproduction.

What an aid this would be for the researches of the department of police, for the proof of alibis, etc.!

We would find no end, would we venture an excursion, be it ever so summary, into the realm of future application of photography.

We would only have to turn to every art, to every science, and say that the drawing of the light is called upon to render them much more valuable services than they can be rendered by any other means.

Until now we are concerned with flat monochromes or polychromes, but it is possible that images in relief may have to rely on the aid of photography.

Already it is used in engraving, either in relief or in impression. We have made by photographic process as well, mouldings in relief, still somewhat imperfect, yet it is certain that we will learn the act of producing better reliefs, and on the other hand that we will obtain true copies of round ornaments.

The various trials in this line, known as photo-sculpture, did not give very satisfactory results; yet we have results at least, and to the future belongs the task of more and more perfecting works of this kind.

In short, the question is only how to transform the plane into a relief, and we shall certainly find a solution in a more practical way.

It remains to consider what influence the art of drawing and painting with light exerts on the arts proper.

It is evident that photography teaches to see nature better, to give a better account for the rules of perspective.

Notwithstanding, there are always fantastics. They will have difficulties in freeing themselves of the true representation of their objects as well in composition as in colour; yet at the same time they try to use originality and impress the stamp of their person-

ality on their pictures; and besides, even the colour shows a tendency to approach more and more to reality, if we behold true pictnres, painted directly by the aid of photography.

Perhaps they wish to turn away from truth prompted by a desire for contrast, and imagine to find colour effects absolutely anti-natural.

This applies to some of them, but the larger number, though led by confirmatory proof to represent truth, are tempted to observe an exactness of colours much as if this question was one of perspective.

Will the art gain thereby? It will in correctness, perhaps it will not in originality. For it is probable that every artist will always have many means of proving his worth by impressing on his canvas the stamp of his personality, which will distinguish it from all the rest.

Notwithstanding photography, Roybet would not cease to he Roybet, and Bonguereau or Meissonnier would not be less than what they are.

All we can say is, that as perfect an art of copying as the art of photography must naturally exert a favourable influence on theory and practice of the beautifnl arts.

We do not understand how it may be detrimental to ideal art, which at all times will be able to assert its rights.

If photography compels it to becomc more accurate, where is the disadvantage?

Is it for fear of invasion of a certain monotony due to this very excess of accuracy?

It would be the same to say that we might ever become weary of the beautiful works of nature because they are always correct in outline and in effect of light and colours.

In our humble opinion, the ideal, the beautiful art, the art of creation, will gain, not lose, thereby, because the artist, not embarrassed by difficulties of composition, will be more at liherty to dart forth into the realm of dreams and pure vision of his imagination. As basis, he will have the infallible guide of true effects rendered by the photographic printing, and nothing will prevent him from embellishing this reality with all the children of his brain.

As a result of the foregoing, we may predict the most brilliant future for the art of drawing, painting, and sculpture with the aid of light.

It will ever he useful to all and for every purpose. Nothing seems to exist capable of taking its place, and we cannot foresee how it might ever become hurtful to the beautiful arts, whose most powerful ally it is already at the present time.

Carbon Printing.*

By W. A. COOPER, Chicago, Ill.

IT is pretty well admitted that the first print made in the camera was by Niépce in 1816, twenty years before daguerreotypes were made, and nine years before these great inventors met. In 1825, then, we have the record of the first "World's Congress of Photographers." What grand results have been accomplished as the outcome of that meeting! Who can tell but some ofthe prophecies now made, thoughts expressed at this congress, may have as literal a fulfilment as the prophecies of our great forerunners in our beloved art?

A little camera, 6 by 6, fitted with a telescope tube containing a lens pointed at a pigeon-house, a sheet of white paper drawn through the salts of silver and exposed to broad sunlight, and we have the first print ever made or (more properly speaking) the first negative, as the lights and shadows were inverted and the image reversed. From this littlc experiment in the garden of Niepce must we date the birth of one of the greatest discoveries of this century. Without following the child through the stages of improvements in all the various printing processes up to the present time, I will plunge at once into the subject I am to talk to you about to-day—carbon printing in relation to reproductive art and as a necessity in the studio of every photographer.

Time was when permanency was not questioned. It was not thought of in 1816, the main thing then was to "get the image." "How to fix it" was the next great question, and with all the varicd processes before us, with the perfection in the making of negatives, the great strides to the photographing of different colours, and getting their values, the vital question should be, what process shall we use that will give the best results, one that can be handed to future generations with some degree of faith that they will endure. That the carbon is permanent is beyond question. That it is adapted to the reproductions of works of art, I only have to point you to thousands of samples in this building, some 18,000 having been recently purchased by the Art Institute from Braun and Co., of Dornach, and their line not half exhausted; and all through the land our schcols and colleges are filled with these beautiful samples.

It is only the few who can possess a Rubens, a Raphael-Sanzio, a Titian, or the works of the great painters of our own day. But Braun of France, and the Autotype Company of England, have made it possible for us to have copies of these masters as permanent as a veritable Rubens, and the demand is increasing.

In 1880 reproductions by any of these processes were practically unknown throughout the great West. It was the day of cheap chromos and paintings by the yard. These made way for the beautiful "Autotype," the first photo-mechanical process to reproduce works of art in this country commercially. These grew rapidly in favour, because, being actual photographs in printing-ink copied from modern paintings and engravings and very cheap, so the chromos, and the daubs called oil paintings, were driven out, and the homes of the poor and our great middle classes were filled with beautiful copies of the "Angelus," "Christ in the Temple," and hundreds of other great works.

Then began to appear autotypes of the last Salon—and of the masterpieces in the Louvre, the Luxembourg, the Vatican, and the public and private galleries of Italy and England.

To show the achievement of photography in this particular channel, and especially to prove what the carbon process has done, let me call your attention to a few pictures in this hall—these beautiful carbon prints; and as we see them to-day so may our children's children gaze on them, for we know them to be as permanent as the diamond. Here we have the "Gleaners," by Millet; there a Corot; here a Rosa-Bonheur, now in the Luxembourg; there a Franz Hals and a Rembrandt; a "Beatrice de Cenci," hy Guido Reni; a Hans Memling, a Michael Angelo; the beautiful "St. Cecilia," by Carlo Dolci; the "Marriage of St. Catherine," by Correggio; a Murillo, a Hans Holbein, and last, the "Children of Charles I.," afterwards Charles II. and his sisters, by Van Dyck. These have all been photographed direct from the originals, so you see we stand very close to these grand old masters. It lacks only the colour.

Outside of a chosen few who had means and could travel, who knew or heard of the great French painters, Bouguereau, Gervaise, or Meissonnier, or a hundred others, until Goupil with his charming photogravures, or Braun with beautiful carbons, made their works known the world over? They sprung into notoriety at once, and to-day hundreds of originals are owned in this country.

What Goupil and Braun have done for the French painters may we not do for ours? Art has grown in America very rapidly. It is only necessary to visit the United States section in the Art Gallery at Jackson Park to prove this. Who knows but that the next great school of art will he an American school? I could name a dozen of artists in this country whose works would find a ready sale abroad. Photographers of America, you must be up and doing. The time is not far distant when I hope to see carbon prints of our own artists on the market. I mean prints worthy of the subject, like those I have called your attention to in this hall. To-day in America I know of one or two establishments working this process almost exclusively for portrait work, but I hope soon to see an establishment started in Chicago ostensibly for the reproduction of works of art.

Now as to general studio and view work. In this age of cheap pictures and cheap printing processes, something should be done to bring about better prices, and give permanent results. This is only following out the natural tendency of things. We have gone rapidly ahead in all other branches; why stop where the negative is made and let the cheap and poorly taught help rush the prints through? One only has to compare carbon portraits in any tone with the best prints of any of the processes used to see that the advantage lies with the carbon. It has greater depth of colour, is less sharp in outline, consequently more artistic. Its natural condition is matt surface, which is fast becoming popular, showing the growth of taste. It will bring better prices, and just now, with prices cut down beyond all reason, the beautiful but evanescent "aristo" advertised at two dols. per dozen, and sixteen prints and a life-size bromide for three dols., surely the carbon should he hailed as a boon to the photographer and a blessing to the country. Take the copying and enlarging departments alone—what a field for this beautiful and permanent process. Look at the millions of portraits that are copied every year; how many of them are fit to hang in our homes, and how long will they last? Surely the pictures of our loved ones should be permanent. What value would these reproductions of the old features possess if in a few short years they would fade?

I make this a strong plea. I believe the time has come to wake up to the folly of using processes for printing our pictures, especially the larger ones, that we know will fade.

* Read at the World's Congress of Photographers.

The reason that photographers have not long ere this adopted the carbon process are many. In the first place, we did not begin at the bottom and study the philosophy of gelatine printing. In 1876 the fascinating double transfer process of Johnson was taught and sold in this country, and at first it seemed simple and easy, and only the few succeeded, and those only after going into it thoroughly. Had the old-fashioned but reliable single transfer process of Swan's been taken up and the photographers satisfied with matte finish, the history of carbon printing in this country would have been different. Unfortunately, the rage has been for highly burnished or glace finished pictures, and the Johnson double transfer caught them. But I am happy to say to you things have changed, and the great growth of photography among amateurs of the better class have helped to bring it about. Now, the desire is for matt surface in all gelatine printing papers, and to-day in Chicago the pictures that command the highest price are single transfer matte surface prints developed on celluloid sheets, and very beautiful they are.

Now, a few words as to the working of the process: I am using, and I advise all beginners to use, a simple transfer. It is as simple as making a negative on a dry plate and less complicated than the toning, fixing, and washing of one albumen or an aristo print. I wish I could give you an ocular demonstration of the process, that you might see how simple the exposing and developing is, but must content myself by describing as briefly as possible how to make a carbon print: Provide yourself with one roll of tissue, one roll of single transfer paper, one squeegee, one yard rubber cloth, one pound of bichromate of potash, one photometer, hot and cold water, and the outfit is complete. Sensitise your tissue in a three per cent. solution of bichromate of potash, by immersion for three minutes, or until it lies perfectly flat face down, and the edges begin to curl up; place it face down on a piece of glass and squeegee out excess of solution, then place to dry face up, on blotting paper like this ⌒ in a dark dry place. It should dry in about four hours; if it takes longer, your room is damp. When dry cut in sizes and place in tin box and it is ready for use within a day or two at most.

Prove your negative with albumen paper, putting a slip on your photometer and exposing both together, print as you would for a proof—no deeper. Note the number printed on your photometer, and that as a rule is the depth to print your carbon. Very simple, is it not? Use a mask on your negative to protect edges of tissue from seeing the light, that they may remain insoluble, and adhere closely to transfer paper. Cut a piece of the transfer paper larger than the tissue, and immerse it with exposed print in cold water. When tissue lies perfectly flat, bring face of print and coated surface of transfer paper together under water. Now lift both out together, placing on glass, and with rubber cloth and squeegee squeeze out all air bubbles and water; leave under weight a few minutes and it is ready for developing. Place the print in warm water of about 75 degs. Fahr., and in a few minutes the gelatine will soften, and the pigment will ooze out; then the paper that had formed the temporary support may be separated by rolling it away, or back, leaving the print on transfer paper. The temperature of water may now be increased up to 90, 100, or 120 degs. Fahr., according to depth of print or age of tissue, fresh tisue developing quickly at 90 or 100 degs. Fahr., while old sensitized tissue may require 125 degs., or even more, but as a rule less will do. When developed, plunge in cold water for a minute to stop development, then into a weak solution of alum to take out any bichromate that may remain, and your picture is finished.

This, then in a nutshell, is carbon printing. One must understand the philosophy of the action of bichromate on the tissue and the action of light on the bichromate, and the whole thing is simplicity itself.

Now in regard to the negative I would like to say a few words. It is absolutely necessary that a strong, vigorous negative be used, fully timed and carried well along to developing, stronger than for albumen printing. As a reversed negative must be used for single transfer, I would recommend for portrait work the use of a prism on your lens; this will give you a reversed negative on glass, and may be retouched as in the ordinary way; but for outdoor work and copies of paintings I use orthochromatic stripping plates, without, of course, the use of a prism.

In copying paintings I use a screen at back of lens, light yellow or orange, according to the picture. In the case of old dark paintings I place them in strong sunlight in a direction that stops all reflection and gives the handling and the technique of the artist. Use a medium stop and give plenty of time—from four to ten minutes.

I shall not attempt to speak of other branches in carbon printing, such as double transfer, or transferring on uneven surfaces, or making transparencies, because after getting posted in the single transfer all these will follow. If the amateurs of this country could only realise the beauty and simplicity of this process it would settle the question, because the demand would drive the professional into it for self-protection.

Into your hands then I leave it for the present, and may the seed fall on good ground and end like the story of the flower told so sweetly by Tennyson:—

> "Read my little fable,
> He that runs may read;
> Most have got the flower now,
> For all have got the seed."

Sensitiveness of Photographic Plates.*

By Professor George W. Hough
(North-Western University Examiner, Ill.).

The extensive use of photography in science, art, and industry makes it desirable to know something regarding the sensitiveness of the plate employed for any specific purpose. The subject, however, is one of great difficulty, owing to the fact that we have not been able hitherto to secure a satisfactory standard of light with which to compare plates.

The method now in use by the makers of commercial plates, to indicate sensitiveness, is far from satisfactory, since there is no direct relation between the numbers used by the same maker, and still less when the plates of different makers are compared. The number twenty-five of one maker may indicate greater sensitiveness than the number fifty of another; and in general the numbers do not convey any definite information as to the time of exposure required. It seems to me that it would be an important step in advance if the makers of commercial plates would at least adopt a uniform system in indicating the sensitiveness, so that the numbers (even if arbitrary) would in all cases have the same meaning.

It appears now well-nigh impracticable to use sunlight as a direct standard for illumination, unless a standard plate is adopted for comparison. But I think it is not impracticable to employ artificial light which will give an absolute measure of sensitiveness for the light employed. Artificial light, however, whether it be from the burning magnesium, the electric lamp, or the flame of a candle, does not have the actinic properties of sunlight, and hence different brands of plates which have the same sensitiveness for any particular artificial light may be quite different for sunlight.

It seems to be tacitly assumed, however, by most writers, that the standardising of a plate in one particular artificial light is all that is necessary. On the contrary, the problem is only partially solved.

During the past ten years I have made hundreds of experiments on the relative sensitiveness of plates in candle-light and daylight, from which it is concluded that the plates of different makers do not necessarily hold the same relation of sensitiveness for the two kinds of illuminations. In the standardising of plates where the minimum visible is used as the measure of sensitiveness, we meet with a peculiar phenomenon, which may greatly impair if not entirely vitiate our results. I refer to the effect of extraneons light received by the plate in its manipulation.

When the wet collodion plate was in general use it was imagined by many that the plate became more sensitive if subjected to preliminary or supplementary exposure. In 1884 I experimented on an emulsion plate and found no change in sensitiveness due to preliminary exposure, and hence inferred that the only effect was simply fogging, which would cause the collodion or emulsion plate to start more quickly in development. I subsequently found that this view of the subject requires some modification. The reason why no difference was noticed in 1884 in the case of preliminary exposure was undoubtedly due to the fact that the plate had already received, in the process of manufacture, all the preliminary exposure it would stand. In the early days of commercial emulsion plates, they were frequently fogged so badly before they reached the consumer as to be greatly impaired, and sometimes practically valueless.

Last year in making experiments on the actinic effect of ordinary red glass used for dark-room illumination, employing a 10-candle lamp, I found such discordant values for different pieces of the same plate when exposed and developed under similar conditions as to call for an investigation of the cause. The statement has frequently been made that the same plate, in its different parts, indicated great variations of sensitiveness. This idea is so directly opposed to everyday practical work in landscape and portrait photography as to seem well-nigh incredible. In fact, if it were a common occurrence one could not make a correct negative. It occurred to me that the abnormal results which I obtained were in some way connected with the manipulation of the plate during the exposure and development. I accordingly made the following experiment:—

* Read at the World's Congress of Photographers.

A Seed No. 26 4 by 5 plate was cut in three strips, using a very feeble light during the operation. Strip No. 1 was kept in the dark; No. 2 received a preliminary exposure of two seconds in the dark-room at one foot distance from the red-glass window; No. 3 received a supplementary exposure of two seconds in the same way. The three pieces of plate were successively exposed in the sensitometer to the light of a candle for ten seconds, placed at ten feet distance. They were then developed together in total darkness. Strip No. 1 printed the figure 4; Nos. 2 and 3, 8 and 10 respectively. This experiment indicated that when a plate received a preliminary or supplementary exposure, it appeared to be about five times more sensitive.

I had observed a similar phenomenon in the case of wet collodion in October, 1891, but attached no importance to it at the time.

The most sensitive wet collodion plate which I have used requires an exposure of 2·5 seconds for a naked candle at one foot distance to make a legible impression, but by a suitable amount of preliminary or supplementary exposure, the time may be reduced to 0·3 second, indicating an apparent increase in sensitiveness of eight times. A great many experiments have been made with various kinds of emulsion plates, in candle-light, feeble daylight, and through red glass, all giving similar results. In order to get the maximum effect, the plate should receive all the preliminary exposure it will stand without producing dense fog. If there is too much fog the numbers will be buried under it.

This peculiar behaviour of photographic plates in light of feeble actinic energy explains very clearly why experimenters have got such discordant results in attempting to standardise them. The phenomenon probably disappears when strong daylight is used; for we know by experience that preliminary exposure does not make a plate more sensitive when used for a landscape negative. The subject may, however, have an important bearing in astronomical photography, where the light has very feeble actinic energy, as in the case of stellar photographs.

The following appears to me to be the explanation of the apparent increase in sensitiveness, due to preliminary exposure. A photographic plate may receive a certain amount of light, and when placed in the developer show no visible blackening of the film. This fact is apparent in using a slow plate, like wet collodion. A plate, therefore, which has had a certain amount of preliminary exposure may be under such strain that a small amount of additional exposure will enable the developer to reduce the bromide of silver. Under this conception the actinic effect should be measured by the intensity of the light multiplied by the time, plus a constant; the constant being a function of the original sensitiveness. In landscape photography the constant would be such a small interval of time as to be entirely lost.

In view of what has just been stated regarding the behaviour of plates in light of feeble actinic energy, it is readily seen that our present method of standardising plates, by using the minimum visible, is open to very serious objections owing to the difficulty in manipulating plates in the dark-room. With the more rapid commercial plates a single second exposure before the developing lamp is sufficient to materially modify the result.

After considerable thought on this subject, it has occurred to me that we can most readily get a uniform system for designating the sensitiveness of plates by adopting an arbitrary plate as the standard of reference, and making our compositions by daylight as well as artificial light. The wet collodion plate has frequently been suggested as a standard of reference; but it has been objected to on the ground that the sensitiveness would not be constant. As a matter of convenience, I presume a slow emulsion plate would answer the purpose better, since such a plate could be interchanged among the makers of commercial plates. By adopting such a method we would at least have a homogeneous system.

I have at different times determined the sensitiveness of nearly all well-known brands of commercial plates for daylight, candle-light, and for red glass. My normal collodion plate is used as the standard of reference for daylight comparisons.

The following are some general results for sensitiveness in daylight:—

Wet collodion	1
Slow lantern-slide plate	10
Rapid emulsion	120
Most rapid plate examined	220

For candle-light, or any other artificial light, the absolute time required to make a legible record can be ascertained. For a naked candle at one foot distance, the following are some of the results:—

Normal collodion	2·5 sec.
Slow lantern-slide plate	$\frac{1}{10}$,,
Rapid emulsion	$\frac{1}{150}$,,
Most rapid isochromatic	$\frac{1}{500}$,,

Isochromatic Photography.*

By G. CRAMER.

AMONG the great discoveries and achievements that characterise our present century and have accomplished results never before dreamed of and formerly deemed impossible, photography holds a prominent place in practical utility as a helpmate to art and science.

Portraiture has been brought to simplicity, and in the fraction of a second we can secure the features of those who are dear to us. Foreign countries and nations are brought to our sight in pictures produced by the camera; movements of animals, too quick to be distinguished by the human eye, are truly and accurately recorded by the highly sensitive photo dry plate, the stars are photographed, as well as the minute bacilli and bacteriæ whose multitudes inhabit the drops of water in the cells of animal life, and which in many instances are the causes heretofore unknown of diseases.

Since photography has rendered it possible to secure the rays of light to the sensitive plate, it has been the aim of scientists and practical workers to bring it to perfection, and the greatest improvements have been achieved in the preparation of dry plates ready for use, and of the utmost sensitiveness. The great desideratum, to obtain photographs in natural colours, is now brought in the reach of possibility, as shown by the fine specimens of reproductions which are on exhibition in the photographic department of our great World's Exposition, and the time may not be far distant that portraits and landscapes are photographed in all the beautiful tints and colours as seen in nature. The most important step in this direction was the production of colour-sensitive plates by which one of the shortcomings of photography is corrected, that is the insensitiveness of the ordinary plates to the yellow, orange, and red colours, which cause these colours to appear much darker, while the blue and violet appear much too light in the ordinary photograph.

The aim of isochromatic or orthochromatic photography is the production of plates equally sensitive to the different rays of the spectrum, so that in the monochrome of the finished picture all the colours are rendered equally correct in their respective values.

This colour-sensitiveness is obtained by the addition of certain ingredients, mostly of the eosine group of aniline dyes, to the sensitive bromide of silver emulsion, and the plates so prepared are called isochromatic or orthochromatic plates.

A great drawback to the introduction of isochromatic plates into general use has been the necessity of a colour screen in order to obtain the isochromatic effect. A yellow glass had to be placed before or back of the lens, or a yellow pellicle in place of the diaphragm to filter the light and to subdue the great actinic power of the blue and violet rays. The isochromatic effect being increased in the same proportion as a screen of deeper yellow colour is used, it necessarily follows that the required exposure is prolonged in the same ratio and to such a degree that the use of a colour screen for portrait work and instantaneous exposures is out of the question. If the yellow screen is not perfectly even in structure and thickness, and absolutely plain, it will cause distortion of the image by aberration. Change of chemical focus and reflection may also be caused by its use, and therefore it is apparent that plates which produce the most isochromatic effect without the aid of a colour screen are the most valuable.

As such plates can now be obtained which combine great rapidity with good colour-sensitiveness, and are no more difficult to work than ordinary plates, their advantages should be appreciated by the photographic fraternity.

In portrait photography the blue eyes, auburn hair, are rendered more truthfully, imperfections in the complexion, such as freckles, are less noticeable, and dresses of any colour are photographed correctly, so that ladies need no longer consult the photographer as to what colour of dress to wear when having their pictures taken.

In landscape photography the main advantage of the isochromatic plate is that distant objects are photographed much more distinctly than with the ordinary plates. A slight haziness in the atmosphere is neutralised by the use of isochromatic plates, while an ordinary plate would not produce any satisfactory result under the same circumstances. White clouds in a blue sky cannot be photographed except with the isochromatic plates, and how much clouds add to the beauty of a landscape is known by everybody. In sunset scenes the superiority of the isochromatic plates is as apparent as in the autumn landscapes with their wealth of yellow and orange tinted foliage.

In seascapes or marine views the horizon is not lost, water and sky being properly rendered.

In commercial photography the instances where isochromatic plates should be used are too numerous to mention. Woodwork, which is generally of a yellowish tint, is photographed more per-

* Read before the World's Congress of Photographers.

fectly; inscriptions on wagons, railroad cars, samples, floral designs, etc., which may not show at all when photographed with an ordinary plate, are perfectly reproduced.

Now, for the copying of paintings in oil or aquarelle nothing but an isochromatic plate should be used, and its advantage for this class of work is most strikingly apparent. In an old oil painting the lights are generally yellow, while the half-tones are of a bluish tint. It is impossible to obtain a good copy of such a painting with an ordinary plate. Plates of full isochromatic effect are necessary for this purpose.

Another advantage of the isochromatic over the ordinary plate is its greater sensitiveness when the light is yellow, as is frequently the case in fall when the sky is cloudless, or in photographing by gas-light.

I have now said enough of the advantages of isochromatic plates, and beg to be excused if I have made statements of facts supposed to be well known; but the isochromatic plate being undoubtedly the plate of the future, it seems to me that its full value should be more generally understood and appreciated.

Posing and Illumination.*

By E. M. Estabrooke, Elizabeth, N.J.

It has devolved upon me to prepare and read before this assembly of artist photographers a paper on posing and illumination in the photographic studio.

It is a pleasing duty, as portrait photography has been the delightful occupation that has claimed my energies for many years of the past, and I hope the pleasure will still be mine during many years of the future.

The subject of posing and illumination in the photographic studio is more nearly related to the artistic than to the scientific part of photography, and therefore there will naturally be a wider diversity of thought and opinion on this subject than might be expected concerning the more scientific and therefore more exact branches of our profession, such as are practiced more particularly by the dark-room worker or the printer, although there can be no doubt that each of these is successful in accordance with his knowledge of art principles and his ability to apply them in his work.

The successful photographer may well claim to be an artist, for the highest product of his genius must be the exquisite flower of the combination of the purest and most cultivated taste and the highest skill.

The artist, however, they say, is born, not made. Nature must first have endowed him with gifts that would have constituted him an authoritative connoisseur in all art matters without having studied either line or rule. The endowment of artistic taste, however, does not carry with it the ability of mechanical expression; taste is of the intellect, inward; mechanical expression is of study and practice, outward.

Taste is God-given; it may be improved by cultivation but cannot be acquired by study.

Manual skill is only acquired by long and generally painful exertion and only retained by constant practice.

The artist, therefore, in whatever line (whether as the musician who charms and enraptures us with heavenly sounds or the painter who enchants us with harmonious colours or the photographer who delights us with beautiful effects of light and shade), is one who has been impelled to acquire the manual dexterity or skill to give outward expression to the beautiful in sound, or colour, or light, whose origin is from within.

All photographers may not be artists in the highest sense, because art is inherent, not acquired; but that which a man has may be improved by study, and observation of the works of artists who have made for themselves a name and reputation as such.

All photographers may and should be students eager to find out for themselves every means that may enhance the beauty or value of their work

At no time in the history of art has the study of art principles in the beauty of form, colour and shade been so easy or the opportunities so numerous as at the present time, the near ending of the century.

Posing and illumination under the photographer's skylight or in the painter's studio must be governed by the same rules, and these rules or laws have so frequently been published in photographers' journals and have been so frequently commented on by eminent photographers for the instruction of their fellow-workers, that it appears unnecessary on this occasion to occupy time by any detailed discussion thereof. I would, however, remind you that you have the works of H. P. Robinson, of Edward L. Wilson, and many other eminent authorities equally accessible, and I would strongly recommend the study of the same and the application of their ideas in your daily work in your studios.

The time is now past when any photographer poses and illuminates any subject without study and consideration.

It is not the rule now to seat your subject carelessly before the camera and fire away, considering that any outcome must be a likeness and therefore good enough. The light now furnishes the modelling and the lens cuts it in; therefore the handling of the light and the use of the lens must receive the study and practice that are necessary to the skilful use of the pencil and the brush

If the artist photographer has any appreciation of the line of beauty, he will easily understand that in posing his subject under the skylight, he should develop or bring into prominence the curve, rather than the angle, and that the centre of gravity should fall within the base.

He should understand that symmetry and proportion must characterise his work, whether of the one or of the many, the single figure or the group.

He must understand that in composition, lines must have supporting lines when not perpendicular, and that a picture is unsatisfactory that carries no idea of firmness and support.

The artist having these elementary principles constantly in mind, will practically make a study of each face and form that comes under his studio light; viewing the subject or model from every direction and by every method of illumination; studying the face by front, three-quarter or profile view, both toward and from the light; and also by the various arrangements of the light, such as broad Rembrandt or shadow lighting, or by any recognised method of lighting that the studio will admit of, that may impart character, form or piquancy to a face or figure that may perhaps lack one or all of these graces when in repose, while abundantly interesting when animated by conversation or engaged in the common affairs of life.

Every face will present some one view that will be more pleasing or interesting than any other. The long, thin face may perhaps be more pleasing from the front; the broad face may look better at the three-quarter view; one view may suppress an angle and develop a colour while an inconsidered pose might bring out the reverse.

The tilting of the head to one side or the other, the raising of the chin or the reverse, may give piquancy to this one and picturesque effect to the other.

In this manner he will decide on that view that gives the most pleasing outline, and that method of illumination that gives boldness and brilliancy where features are small or insipid, or that tones down the harshness of a too rugged face without losing altogether its characteristic quality, for it is well to keep in mind that an indication of character adds as much to a portrait as does action or life to a pose, avoiding always the commonplace. Tameness in expression, pose or lighting is contemptible, and will rob even the finest execution of every charm; at the same time an evident straining for effect in pose or lighting is objectionable to any refined taste and should be avoided as strenuously as the other extreme, however true it may be, that the daring innovator may sometimes produce charming effects that may not come strictly within the approval of a too cultivated taste.

In my opinion a resort to ultra effects is only justifiable in cases where the face and form of the subject are not amenable to ordinary methods, and when it may be desirable or profitable to experiment.

When posing a single figure in either full or three quarters, certain accessories may be used with good effect—but care should be exercised in making the model the central point of attention; everything should be subservient to the portrait.

The three quarter length will always be better without accessories unless in a sitting or leaning position, in which case the proper support will necessarily be provided.

Groups of two or more require the exercise of common sense and a knowledge of the capabilities of light and lenses. In form, the group should be as symmetrical as may be, with dark complexions and dresses placed next the light; and in large groups, more attention should be given to the general than to individual effect.

The best photographic light is received from two windows—a top window or sky-light joined to a side window, which shall reach to within three feet of the floor of the studio.

The dimension of the sky-light should not be less than ten feet square if space permits, but preferably larger if convenient, the pitch of the upper light only enough to easily and safely carry the snow and ice of winter and shed the rain of summer without leakage.

The quality of the top light is softness and delicacy of detail, but with two heavy shadows beneath projection.

The quality of the side light is vigorous harshness with abrupt lateral shadows.

The one corrects the other to any extent desired, so that having a

* Read before the World's Congress of Photographers.

top and side light properly shaded with movable curtains, every description of face may be so lighted as to make prominent all the good points and to lessen or entirely suppress all that is not desirable.

By a proper arrangement of the top and side light we can give boldness and prominence to small or weak features. We can by similar means soften and refine coarse and rugged faces.

By seating the model facing the light and at a suitable distance therefrom it is possible to remove to a great extent the appearances of age; the wrinkles and crows-feet are lighted up, but cast no shadows.

In fact it is possible to change the shape of the face of any subject to a great extent by judicious management of the light.

Having a good light, use all of it that may be used with advantage according to the method of lighting adopted for that particular subject.

Many photographers shade their lights down closely and give long exposures; but the preponderance of opinion among artists of recognised ability is in favour of using all the light the model will bear and make shorter exposures comparatively, thus obtaining bolder modelling, finer gradations and more brilliant effects, while not losing the softness that is characteristic of all really first-class work.

I have stated that time of exposure has much to do with the quality of the negative; it is also very true that the character of the dry plate has an important bearing on the resulting negative. I have always found that thinly coated plates invariably had a tendency to make negatives whose printing quality tended to contrast because of the fact that the shadows were always thinner than they looked. Such plates require longer exposure and the subjects should be more evenly lighted than when plates of a thicker coating, although of even sensitiveness, are used.

The effect of the lighting of the subject will not be the same on the sensitive plate as it is on the retina of the operator's eye; therefore the photographer by closely observing the action of the lens will learn to see photographically, or to understand the precise effect on the sensitive plate of any method of illumination he may employ for his subject.

Also he must understand that the time of exposure will greatly modify the effect he may be desirous of obtaining.

The subject should be posed well out under the light and generally at a proper distance from the background to get what is called atmospheric effect. Then if the whole figure or head is well lighted a proper exposure will give the effect of daylight illumination, while a short exposure will produce the effect of artificial lighting.

By daylight illumination I mean that the figure or head will be fully lighted with soft modellings and easy gradations from high light to transparent shadows, while by artificial illumination the lights are chalky or flatted and the gradations are abrupt to heavy shadows. I therefore consider that it is safer to err on the side of over-exposure than to under-expose, although I have known eminent photographers to lean constantly to the short exposure for picturesque effects.

Picturesque effect of pose and light should be aimed for in all photographic portraiture, and a thorough knowledge of the peculiarities of light and lens should be acquired by the artist so that his judgment may ever readily arrive at the proper methods of arrangement of the light and the exposure for lens to produce the effects desired for any face or figure with as little delay and hesitation as possible.

This promptness of decision will secure the confidence of the sitter and facilitate matters in a large measure, the natural result being more patrons, enlarged business and increased profits. That such may be the good fortune of all who have listened to my views on the subject under discussion is the sincere wish of your friend and fellow-labourer.

Holiday Resorts and Photographic Haunts.

THE WEST SUSSEX QUADRILATERAL.

BY THE EDITOR.

PULBOROUGH, HARDHAM, STOPHAM, AND FITTLEWORTH

Pulborough, L.B. & S.C.R., 50 miles. This is beloved of fishermen; special tickets are issued for members of fishing clubs, and everywhere, at hotels, etc., one sees cards inviting the disciple of Isaac Walton by special terms. I spent some little time here, and the only thing I saw caught was a small fish about three inches long, which, probably, would not have weighed as many ounces, but with which the fisherman seemed well pleased, and a crab, this last being by some small boy who was very intent on "saucing" me as I stood on the bank with my camera, and thus missed his stroke, upset himself, and nearly upset the boat; that wasn't my fault, though if I could have assisted I should have made that boat upset just to point the moral and adorn my tale.

On leaving the station, proceed down the street till you come to "The Swan," I think it is, which is a very pretty hotel covered with creepers and surrounded with wasps, both inside and out. This is a C. T. C. hotel, and the charges reasonable, and the landlord, Mr. Nutt, very willing to give all information and very obliging; in fact, chatting to him I remarked on the pretty view there was to be had from the meadow just across the bridge, adding, "But you have spoilt it by your hideous iron dining-room." Imagine my astonishment when he said, "Well, sir, if you'd let me know you wanted to take that view, we'd have soon had the room down; it only wants unscrewing." What a pity there are not a few more like him; what a world it would be for us photographers if everybody took down for us all ugly and obtrusive houses and trees, etc. They are not all of the same sort at Pulboro', though, as I found out, for I went to Old Place, a farmhouse, where an old mansion has been converted into farm buildings, and here permission to photograph was churlishly refused.

However, having reached the hotel, turn to the right, cross the bridge, get over the railing at the side, and a charming picture can be made; the old bridge, the river, an old malt-house, red-tiled houses, backed up by some magnificent elm trees, and then right on the top of the hill the church tower; this is well worth a plate or two.

Recrossing the bridge and keeping straight on, leaving the road to the station on the left, and ascending a rather stiff hill, the church will be reached. Here there is a lych-gate decidedly worth a plate, and this, the cottage on the left, and the church behind make a good picture, but which must be taken before noon or else the light is dead against you. Having done this, and prospected inside the church, which I did not do, for I had too much work to venture on interiors that day, one should retrace one's steps, crossing the bridge again, and keep right on the hard and, as I found, hot and dusty turnpike road till some thatched cottages are reached. These are Hardham, and there is a quaint little church here, and with the thatched cottages one may expose at least three or four plates. Continuing on, you will come to a green, with a fine flock of geese, a bit of a pond and fine trees, where yet another picture or two may be made. Further on still on the left-hand side will be seen a white gate with a pretty ivy-covered house standing a long way back. On the left of this house is the remains of Hardham Priory, permission to photograph which was readily accorded me by the owner, and a view of which I hope to give next week. Round the back of some farm buildings another view of the ruins and some very old buildings may be had, which are well worth taking.

Now back into the road again, turn back, too, towards Pulboro', and take the first turning to the left, which leads down to a mill; here one or two pictures may also be obtained, and I obtained a very good negative of the mill race with some small urchins fishing, but, alas! when drying the film melted and ran into streaks, utterly spoiling it. Cross the bridge and follow the footpath across the fields till you get to a crazy wooden bridge, keep a sharp look-out on the way for the bullocks which may be there, and which, if they are the same ones, may give you as as they did me a smart run, but with twenty yards start out of about thirty I could afford to look back, when I got on to the bridge, and derisively smile, and metaphorically follow the example of that little vulgar boy who "put his thumb on to his nose and stretched his fingers out." Across yet another field, looking out for the dykes, over a gate into the turnpike road again, leave Pulborough behind you and walk on till you come to Stopham Bridge, which though a little difficult to get at, and requiring a short-focus lens, is well worth a plate. By the side of the bridge will be found a small swing-gate and a path through a wood; this I explored and found myself on the edge of a turnip field, where I flushed a hen pheasant and her brood; barking back a bit, I took a lower path and came out on a bit of sandy heath, smothered with blackberry bushes and plenty of small children gathering them; here one or two effective little bits may be got. To continue on this path would lead back to Pulborough, and I am strongly tempted to advise anyone who may be doing this part to walk back to the station and take the train to Fittleworth, But if walking is preferred then cross Stopham Bridge, and follow the road till you reach Fittleworth; it was only 2¼ miles of hot, dusty, and uninteresting macadamised road, and never a picture anywhere, when once out of Stopham.

Fittleworth is a charming little place, and is much beloved of artists, who have made the Swan Inn their headquarters, and ornamented the walls of the parlour with sketches. The inn itself is picturesque, and close by are some thatched cottages, and higher still the church, which is prettily situated and well worth a plate, the best point being, I think, on the common. Between the village

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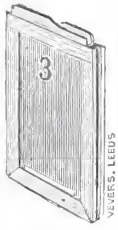
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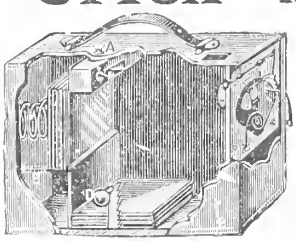
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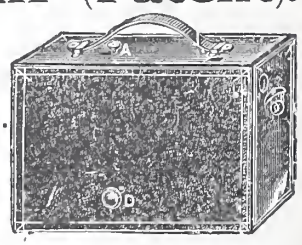
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IMPORTANT NOTICE.

IN the issue of THE AMATEUR PHOTOGRAPHER for October 6th will appear the first weekly instalment of the only English translation of Volume III of DR. EDER'S incomparable

'HANDBUCH DER PHOTOGRAPHIE,'

which forms a complete treatise on the use of Gelatino-bromide and Gelatino-chloride of Silver Emulsion.

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and the station is a mill, and one or two good things may be had here, an old bridge, a lock (now disused), and sundry pastoral bits, all of which claimed our attention, till it was so late that we had to make for the train and wait for the next day.

A Reminder.

May we remind our tourist companion that the notes were to be (1) short, (2) suggestive? Moreover, we have assumed that where many facts were necessary local guide-books would be consulted. Special attention was also called to Kelly's Sussex Directory. Our tourist was also warned that the notes, for lack of space, would often be disjointed and always abrupt. To the notes was assigned plain matter of fact; to the editor's masterly pen, artistic description.

Another Road to Reach Petworth.

Our last notes left you at Burton Mills, with a promise of a visit to Burton Church. We must yet postpone this visit.

Consult your map. Our former trip took us from Amberley, through the Gault district, by a walk under the hills.

To day Pulborough shall be our starting-point, and our route shall be over the greensand area. Before we close our "round" we will try to show how the character of each district through which we have passed is affected by its geological formation.

Our Itinerary.—Pulborough, Hardham Priory and Camp, Stopham, Fittleworth, with delightful strolls over its commons, through the village to the north of Fittleworth church, through Coates to Purton and on to Petworth station!

Pulborough.—What's in a name? Here we have the Celtic, *pwl*, a pool, and the A.-S. *byrig*, an earthwork. What do you expect to find? Surely earthworks near to water. What of its history? May we not expect the evidence that the Saxon, who followed the Roman, who had followed the old Celt or Briton, made here a permanent settlement?

Cross the bridge to Hardham. Consult your map. (1) Note the junction of the railway to Midhurst, with the railway to Ford. (2) Trace the peninsula formed by the winding Arun and its tributary the Rother. (3) Place one dot a little to the right of the "M" in Coldwaltham, and then a small □ evenly across the railway. Here where you place the square was a Roman camp. (4) Place another dot close to the first H of Hardham. Here stood the Priory of the Black Canons.

Specially note that both camp and priory are on rising ground, above the Arun valley. What a position for a permanent camp! and not less for a priory whose "canons" were men of the right spirit? What better site could have been selected? Fish in the river, game in the adjacent forest of Anderida, a good water way in the Arun.

The Roman Camp.—In our visit to Bignor we traced the Roman road down Bignor Hill. Place a × half-way between Bignor and West Burton, another at Watersfield, another at Coldwaltham, and then again where the road from Hardham crosses the Arun.

Now may we venture to assure you we believe we have correctly shown the road (1) by the reddish tint of the soil, the colour of the gravel of the gravel pits of Coates and Coldwaltham, where the Romans dug their road-making materials; (2) by the lines of aridity in dry weather across the fields; (3) by local traditions, which tell of parish roads made from the materials carefully laid by the Romans.

Roman Camps.—Three kinds: (1) Temporary entrenchments for surveying and subjugating. (2) Camps intended to last for a single season. These two classes were generally built on heights. (3) Permanent camps on the lower ground near a good supply of water. These often developed into fortified towns, changing the Roman *castra* into the British *caer*, and then into A.-S. *Ceaster*, as in "Chichester"! Here, at Hardham, we have a permanent camp, a "hospitia," intended as a resting-place for soldiers on march.

Evidences of Roman Occupation.—Shape of the camp, cinerary urns (the Romans at this period were cremationists), pottery.

Evidences of Roman Celtic Occupation.—Remains of sandals supplied to the dead, whose soul it was thought "had to pass through a great lande full of thornes and furzen;" organic remains, part of the funeral feasts; among these horns of the original Celtic ox; flint implements.

Hardham Priory.—Hardham, the Hereedham of Domesday, its name varied three times before it became Hardham. So with its early Norman owner, John de Alta Ripa, John of "High Bank," *i.e.*, "far up the river." In time "De Alta Ripa" becomes "De Hault Rey," and finally "Dawtrey." Sir William, of this family, founded the Priory for the Black Canons of Augustine, in the reign of Henry II.

Who were the Black Canons?—Of the religious bodies in early days, the monks were called the Regulars; the clergy, who lived on their cures, the Seculars; an intermediate class who lived together in priories, but who had not taken the vow of celibacy, nor wore the tonsure, nor deprived themselves of beards, the Canons. Each division of each of these classes was known by the colour of its dress.

The Priory.—Permission will be most courteously given to inspect the ruins of the old Chapter House.

Stand with your back to the farm-house, built on the foundations of the old Refectory. In imagination continue the line of the old Chapter House, now in ruins, some thirty paces. This will include the Sacristry. Now place another row of buildings of equal length on your left, and connect the ends of these with the old Priory Church. Place cloisters round the interior of your quadrangle, and you have to some extent restored the Priory.

Hardham Church.—Was the clumsy workmen, of whom we here have evidence, the original builder or the restorer? Notice how these builders utilised the tiles and building materials of the Roman station. A fine yew-tree once stood in the churchyard. To Mr. Lower's query, why it was cut down, the parish clerk gave answer, "It was wore out and foreolded." The walls are covered with mural paintings, or rather, perhaps, the remnants of them.

A Few Words on Mural Paintings.—Distemper painting on the interior surface of walls, a substitute for Italian mosaics. The Reformers objected to these vestiges of Popish times, and churchwardens were ordered to paint across them texts of Scripture. As we see here, have seen at Amberley and Bury, and shall see at Burton, the churchwardens of the seventeenth and eighteenth centuries erred yet more, and whitewashed many a mural painting.

The subjects of mural painters were principally of the New Testament, or legends of the saints—only one Old Testament subject in Sussex, viz., Adam and Eve. In Hardman we have the Nativity and Resurrection, on the chancel arch is a fragment of the Baptism of Christ; while the symbolical figure of the Christian triumphing, mistaken for St. George, has almost disappeared.

Now for Pulborough.—Notice the sandpits. We have left the chalk, crossed the Gault and the Upper Greensand, and the sand-pits here and at Fittleworth are in the Lower Greensand.

The Church, more resembling a church of the midland counties than a Sussex church. The architecture of the nave and the south aisles indicates builders of the reign of Henry IV., the chancel and nave builders of earlier date. Look down the arcade and see how the chancel bends, a feature sometimes to be seen in old churches, and indicating, some say, the inclination of the head of Christ on the cross. You must study the church with your Parker's Glossary.

On leaving the church take the road over the railway. The farm buildings of "Old Place," on the right, are the relics of an old mansion, built probably in the reign of Henry VI. Visitors have evidently taxed the good nature of the tenant. It would be well therefore to turn down the road beyond the buildings, and look at them over the farm-yard gate.

Further on is a circular mound. This you need not visit. It is surrounded by a vallation, and it may have been a place of observation, with its view of the ford of the river, and the country around. "New Place" gives the remains of another old mansion.

Obtain from near the church a good view of the country to the south. On the south-east is Wiggonholt, adjoining Pulborough, where, in deepening the "dipping hole," to secure more water, Widow Shepherd brought to light some 1,800 Roman coins.

A short distance to the N.E. end of Pulborough Street are indications of a group of Roman buildings, one of which is the evidence of a circular mausoleum of which, when laid bare, it was said that there were few out of Italy equal to it. At Broomer's Hill were found four pigs of Roman lead stamped T C L T R P V T B R E X A V G, interpreted thus: Tiberius Claudius, Tribunitiæ Potestatis, Britanniæ Rex, Augustus. Have we not justified Pulborough?

Now on to Stopham. Cross the Arun by the five-arched bridge (no other in Sussex has so many arches); we have before us the home of the Barttelots, representatives of one of the most ancient families in England. Its founder was Adam Barttelot, who served as a squire to a knight, Brian, at the Battle of Hastings. The pavement of the church is almost composed of large slabs of Sussex marble, inlaid with figures and memorials of the Barttelot family. The earliest is John Barttelot, who died in 1428. Near him lies his son, who fought at Agincourt.

The mural tablets on the W. wall will lovingly perpetuate the memory of the late Major Barttelot, of the Emin Pasha relief expedition. The church itself is largely Norman. Study it with Parker. Notice what appears to be a double chancel. The stained glass in the chancel window is taken from the old Manor House, demolished in 1638, and now to be found in the north of the church.

Walk on to Fittleworth.—Here we must allow you to wander at your own sweet will. A long day's ramble, and the care of our good hostess of the "Swan" will tempt you to take yet another day. Now we have in Fittleworth an excellent opportunity of becoming acquainted with the domestic architecture of Sussex. It was our wish to chat with you on the subject on the banks of the Rother, and to give you an introduction to this charming West Sussex river.

Walk through Coates to Bignor, past Coates Castle to Burton Church.—Select if possible a day of sunshine, and one when you are not in a hurrying mood. On your road specially note the old Manor House and a very old farmhouse on the opposite side of the road.

Stroll into the little church, following the good example now so often set; it is open all day. Notice the "stoop" just inside the door. *Consult Parker.*

That beautiful lane, three-quarters of a mile, ere Burton Mill is reached!

We hasten to the church, which is kept locked up. The key may be obtained at the house. Notice the remarkable adjunct of a painted rood loft; also the kneeling figure in brass on the north side, Elizabeth, wife of Sir W. Goring, a lady wearing a herald's tabard over her dress. Note also the mural paintings. On the east splay of a window on north wall is painted a female figure, crucified head downwards. Over some texts have been painted royal arms, and also a grand display, evidently the outcome of a vigorous cavalier in the reign of Charles I.

On leaving the church, make for the beautiful avenue of trees skirting the west of the park. Leave the north lodge gate, cross the road, and take a very pleasant path through the wood to the Petworth road for Petworth station. Petworth town is more than a mile distant; an omnibus meets the train, but its fare will take you back to charming Fittleworth and its "Swan."

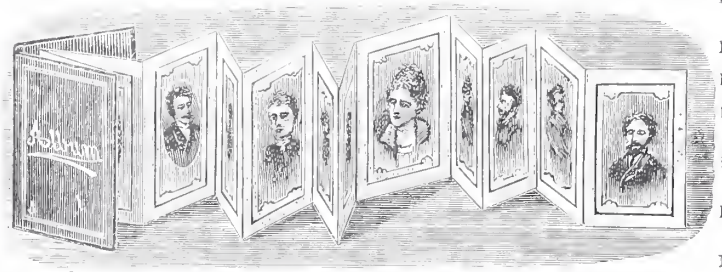
(*To be continued.*)

Apparatus.

PERCY LUND AND CO.'S PANORAMIC ALBUMS.

PERCY LUND AND CO., of Memorial Hall, E.C., and Bradford, have sent us samples of the above which they have introduced for mounted prints. Covered with neat dark-red cloth, and provided inside with stout, rough paper leaves, with slits for reception of the corners of the mounts, these albums have satisfactorily solved the question what to do with mounted prints. They are neat-looking, and have the great advantage of enabling one to change the prints with the minimum of trouble. These are certain





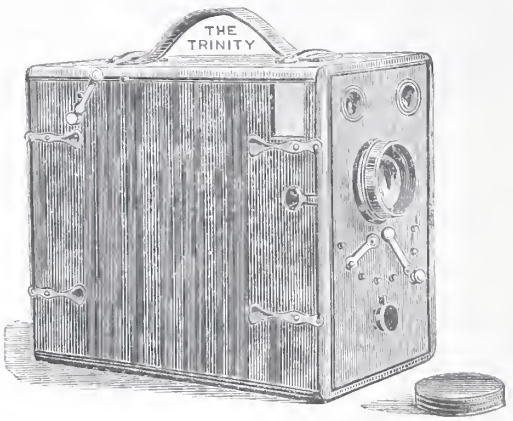
to become popular, and one filled with prints will form a handsome but inexpensive present to anyone. Prices, to hold twelve C.D.V., 1s., or twelve cabinets, 1s. 6d.

THOMAS'S SANDELL FILMS.

R. W. Thomas and Co., of 10, Pall Mall, have sent us a sample of the above films, which they have placed upon the market, and they combine all the advantages of the Sandell plates with the lightness of films. Our trials have yielded us excellent results, and the celluloid support is very bright, and free from blemishes or colour. The method of treating them is the same as for the well-known plates, and these films will certainly take the place of the former.

CURTIS'S TRINITY FOCUSSING HAND-CAMERA.

Curtis Bros., of 10, Suffolk Street, Dublin, have just placed the above camera on the market. It is constructed to carry twelve quarter-plates or cut films, and is fitted with an extra rapid rectilinear, with a time and instantaneous shutter working between the lenses, which will give exposures from time to 1-20th and 1-100th of a second; the aperture of the lens may also be altered by a small knob. A special ingenious device,



which does away with all rackwork, etc., is adopted for focussing, and the range is from 4 ft. to infinity. The plates are changed by release of a lever, which also registers the number of exposures. Vertical and horizontal finders are fitted, and the camera is covered with morocco leather, and is well made, and will be found an efficient and useful instrument, and very moderate in price, £4 10s.

Exhibitions.

SOCIETY.	ENTRIES CLOSE.	OPENS.	CLOSES.	ADDRESS OF SECRETARY.
Hove Camera Club	—	Sept. 20	Sept. 21	H. Emery, 142, Church Road, Hove.
P. S. G. B.	Sept. 13	Sept. 25	Nov. 15	R. Child-Bayley, 50, Gt. Russell St., W.C.
Hamburg	—	Oct. 1	Oct. 31	Das Ausstellungs Committe, 33, Schwanenwik, Hamburg.
Photographic Salon	Sept. 27	Oct. 9	Nov. 11	Sec., 215, Shaftesbury Avenue, W.C.
East London	Oct. 10	—	—	W. R. Gould, 61, Gibraltar Walk, E.
Hackney	—	Oct. 17	Oct. 19	W. Fenton Jones, 12, King Edward Road, N.E.
South London...	—	Nov. 7	Nov. 11	C. H. Oakden, 53, Melbourne Grove, Dulwich, S.E.
Leytonstone Camera Club ..	—	Nov. 20	Nov. 25	A.E. Bailey, Rose Bank, South-west Road, Leytonstone.
Madras	—	Dec.	—	Hon. Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28, 1894	113, West 38th Street, New York.

Societies' Notes.

WIDNES.—On Wednesday, 30th August, a well-attended meeting was held at Bedford Chambers, at which it was decided to establish the Widnes Photographic Association. Officials were appointed as follows:—President, V. C. Driffield; Vice-President, G. E. Warner; Council, J. S. Sinclair, A. Wareing, W. Prestnall, O. White; Hon. Secretary and Treasurer, G. Rae (Bold, near Widnes). The inaugural meeting of the Society will be held on Wednesday, 13th September, when the President, V. C. Driffield, will demonstrate practically the "Determination of the Density of Negatives and Bromide Printing."

THE seventh annual exhibition under agreement between the Society of Amateur Photographers of New York, the Photographic Society of Philadelphia, and the Boston Camera Club, open to all

photographers, will be held by the Society of Amateur Photographers of New York, at the galleries of the American Fine Arts Society, 57th Street, near, Broadway, New York, from the 16th to the 28th of April, 1894. Entry forms can be had by applying to the Committee. Address, 113, West 38th Street, New York. Exhibition Committee: T. J. Burton, R. A. B. Dayton, R. L. Bracklow.

The Hackney Phot. Soc. Exhibition will be held at the Morley Hall, Hackney, on October 17, 18, and 19. It is to be held on the same extensive scale as last year, and the judges will be well-known gentlemen. Music will he on at intervals, an excellent band will he secured, organ recitals. Open first evening at 7.30, and the following days at 12 mid-day. Four open classes, one will be for pictures which have secured medals or awards before; and the other three for lantern slides, portraiture, and general work.

Mr. S. Herbert Fry, of 12, South Villas, Camden Square, N.W., has been appointed by the Paget Prize Plate Company technical demonstrator for their lantern plates and printing-out papers and opals. And from the syllabus of his lectures, which he has sent us, they will he well worth hearing, and Hon. Secs. had better apply to Mr. Fry to the above address, or to the Paget Prize Plate Company, Watford.

The following are the conditions of the *Canadian Photographic Journal* Amateur Competition:—Class A, Landscape.—This competition is open to all amateurs and will be governed by the following simple rules:—"(1) Open to all amateurs. (2) All photos sent in will become the property of the journal. They will form the nucleus of a loan collection, which will be circulated, free of charge, among the amateur photographic clubs of Canada, with a view to mutual improvement. (3) Competitors must send not more nor less than three mounted views. (4) No restrictions as to size. (5) Any make of plate and any printing process may be used at the option of the competitor. (6) Name and address of competitor, together with name of plate and printing process, as well as any other information likely to be of service to amateurs, must be clearly written on the back of each photogram. (7) The views sent in will be judged on their merits alone, totally irrespective of size, according the following points:—(*a*) Artistic selection of view; (*b*) chemical manipulation, comprising the development of original negative and the quality of printing; (*c*) technical work, including judicious trimming, care and skill exercised in mounting, taste shown in the proper selection of the mount and the general finish of the picture as a whole. In this competition we offer as a first prize a magnificent casket of lenses, now being manufactured for us in the old country by an eminent firm of opticians. The contents of this casket (which is lined with velvet and richly covered in morocco) comprises eleven rapid rectilinear, eleven wide-angle rectilinear, and seven view lenscs. With these lenses it is possible to adopt sixteen different foci, ranging from 4 to 29 in., covering any size plate from $3\frac{1}{4}$ by $4\frac{1}{4}$ to 24 by 28 in. The latest improvement of the well-known "iris" diaphragm will be fitted throughout. The second prize will be a handsome silver medal. The third prize a handsome bronze medal. These medals will be struck from a special die, now being made for this journal. The fourth prize will consist of a year's subscription to the *Canadian Photographic Journal*. Pictures for competition must be received not later than December 1st, 1893. Prize winners will be announced in the Christmas double number."

Societies' Meetings.

Cheetham.—The first meeting after the recess was held on the 29th ult., the President in the chair. The evening was spent in conversation on various topics, and in criticising prints shown by the members from negatives taken during their holiday, and a very interesting time was the result. After a discussion, initiated by the Secretary, as to having a lantern exhibition, it was resolved that he be empowered to arrange for an exhibition of slides by members and others at an early date, open to members and friends.

Hackney.—On the 29th ult., Mr. E. Puttock in the chair, Mr. T. H. Smith showed some Nikko paper toned with the sepia bath, but said it was a very tedious process. Mr. Barnes showed a Barnet plate, and asked the cause of markings apparently like fog. Mr. Beckett thought the plate was not at fault. The Hon. Sec. said he would get an opinion from the firm. Mr. Hensler had used the P.O.P. Ilford formula more concentrated, and found it tone quickly and regularly. Mr. Farmer had been advised to use ferrotype plates for squeegeeing. Mr. A. Barker said old ones were apt to blister. The Hon. Sec. advised using an enamelled metal plate such as now sold. A question was asked, "Is quick negative drying advantageous?" Messrs. Hensler, Tunston, and others deprecated it. Dr. Roland Smith read a paper on "Daylight Enlarging." It was a great advantage to enlarge, no enormous cameras should be necessary. He used a window facing N. by N.E. or N.W., fitting a tight frame to exclude light, and having attached dull opal to reflect in. Camera slips on to groovings of frame, and two mop handles are used on which is placed board to take enlarging paper. A rapid rectilinear lens was advised, not portrait. Eastman's slow bromide paper with ferrous-oxalate developer was recommended. He used the same stock for four years, but after using placed out (in tubed bottle with film of paraffin) in sun. The Hon. Sec. preferred amidol, and found ferrous oxalate blocked out detail too much.

Holborn (Camera Club).—Sept. 1st, Mr. D. R. Lowe in the chair. Mr. Belton, of the Paget Prize Plate Company, gave a very interesting lecture and demonstration upon the company's print-out opals and lantern slides, which gave great satisfaction to the members present.

Liverpool.—The monthly meeting was held on the 31st ult., Mr. P. H. Phillips, the Hon. Treasurer, presiding. There was a large attendance. After the election of three new members, Mr. F. Anyon, a member of the council, exhibited twenty-one prints, representing fourteen different printing processes, and clearly explained the method of working each. Instructions were also given for producing the best results. A great deal of useful information was contained in the address, which was very interesting throughout.

Northern Tasmanian (Camera Club).—The fifth annual meeting of the Northern Tasmanian Camera Club. Mr. R. L. Parker, Vice-President, occupied the chair. The Secretary read the annual report and balance-sheet, which showed that the club was still increasing its membership, and that the new year started with a fair credit. The members continued to make good use of the library, thus gaining much useful information from the various journals subscribed to by the club. The attendance at the monthly meetings during the year was larger than previously, the members evidently taking great interest in the work of the clubs. After four years' services as Secretary Mr. F. Styant-Browne intimated that owing to increasing business engagements he had reluctantly been compelled to resign, and the members that evening would have to elect a successor. The following officers were elected for the ensuing year:—Patron, His Excellency Lord Gormanston; President, the Rev. A. H. Champion, M.A.; Vice-Presidents, Dr. H. A. Roome, Mr. F. Styant-Browne, Mr R. C. Kermode; Secretary and Treasurer, Mr. J. Sparrow; Librarian, Mr. F. S. Browne; Committee, Messrs. F. Stewart, W. H. Twelvetrees, and C. Nickolls. The Chairman, on behalf of the members, then presented the retiring Secretary with a purse of sovereigns, intimating that the members wished its expenditure in an optical lantern and accessories, having preferred giving Mr. Browne the choice of procuring the make of lantern he most desired. Mr. Browne, who received quite an unexpected surprise, thanked the members for their kind appreciation of his services. A hearty vote of thanks was accorded the Chairman for the use of the room during the year; and the first lady was enrolled as a member of the club.

Woolwich.—At the last meeting of this society a paper was read on the "Collodio-Chloride Printing Process" by Mr. G. H. Moss. The process was dealt with from the preparing of the collodion to mounting the print in a manner that proved Mr. Moss to be thoroughly at home with the subject.

SOCIETIES' FIXTURES.

8ept. 7—Uttoxeter.—Excursion to Shrewsbury.
„ 7—Aston.—General Lantern Evening by Members.
„ 9—Bristol Camera Society.—Excursion to Clevedon.
„ 9—S. London.—Excursion to Harrow.
„ 9—Manchester.—Ramble to Durham Park.
„ 9—Northamptonshire.—Excursion to Honiton and Cowper's Oak.
„ 9—Northern Photographic and Scientific Assoc.—Excursion to Hadley Wood.
„ 11—Darlington.—Exhibition of Lantern Slides, "London Street Cries," by Mr. E. Scance.
„ 11—N. Middlesex.—"Halation; its Cause and Cure," by Mr. Birt Acres.
„ 12—Hackney.—"Failures."
„ 13—Birmingham Photographers' Union.—"Switzerland," by Mr. V. E. Gilmer.
„ 13—Photographic Club.—Members' Open Night.
„ 14—Leicester and Leicestershire.—Excursions to Ashby and Cokorton.
„ 14—Ashton-under-Lyne.—Exhibition.

Sept. 16—HUDDERSFIELD.—Ramble to Drop Clough, Slaithwaite.
,, 16—BRISTOL CAMERA SOCIETY.—Excursion to Clifton.
,, 16—PHOTOGRAPHIC CLUB.—Excursion down the River.
,, 16—WEST LONDON.—Excursion to Wembley and Neasden
,, 16—GOSPORT.—Excursion to Sea View.
,, 16—BOLTON.—Excursion to Entwistle.
,, 16—HACKNEY.—Excursion to Kew by boat.

Dr. J. J. Acworth, F.I.C., F.C.S., of the Imperial Dry Plate Company, is to be married on Tuesday next at St. Mary Abbots, Kensington, to Miss Marion Stevenson, who is the first lady who has taken the title of A.R.C.Sc. We are sure that all Dr. Acworth's friends—and they are many—will join us in wishing him all happiness.

To Correspondents.

All communications for these columns are to be addressed to The Editor "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

RULES.

1. Write clearly and distinctly on one side of the paper only.

2. Write each Query or Answer on a separate sheet of paper.

3. Write the name and address legibly on the back of each communication, and sign all Queries and Answers with name or *nom de plume*.

4. All matters for these columns MUST be received by TUESDAY MORNING'S POST.

5. The Editor does not undertake to answer Questions by post.

6. In answering Queries correspondents are requested to mention, in every instance the *number and full title of the query* referred to.

QUERIES UNANSWERED.

June 2.—No. 6102.
,, 9.—Nos. 6106, 6108.
,, 16.—Nos. 6109, 6110, 6111, 6112, 6113.
,, 23.—Nos. 6115, 6116.
,, 30.—Nos. 6118, 6119, 6120, 6121, 6123.
July 7.—No. 6128.
,, 21.—Nos. 6131, 6133, 6134, 6135.
Aug. 4.—Nos. 6142, 6146, 6147.
,, 11.—Nos. 6150, 6152.
,, 18.—No. 6153.
,, 25.—Nos 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

J. LAING.—A, most certainly.

A READER.—(1) It would not be necessary to buy a new camera; almost all quarter-plate lenses will fit a quarter-plate camera. (2) We do not quite understand what you mean by the colouring of the negatives, giving the proper tints on the print—please write and explain fully. (3) A bicycle lamp would be useless. The best thing you can do is to rig up a daylight enlarging apparatus, which can be done at a very small cost. We should advise you to get a copy of the "Dictionary of Photography," which will give you a lot of help. (1) Slightly over-toned. (2) Ditto. (3) Ditto. All the untoned prints are printed to the right depth, and are fair examples of ordinary amateur portrait work.

THORNHILL.—The only thing to do is to expose for the foreground and leave the distance to take care of itself; the dark portions at the sides are due to the lens not covering so large a field. Naturally when you are at an altitude and point your camera, it requires less exposure. With regard to the marking, we are not sure, but will look them up and let you know next week.

MAIDSTONE.—We never find any difficulty; make up your toning bath, add a little bicarbonate of soda to it, wash your prints well, and then tone them and fix in an alkaline fixing bath. Try this, and let us know how you get on.

CROWN.—The nearest firms would probably be the Manchester Oxygen Company, Gt. Marlborough Street, Manchester, and the Birmingham Oxygen Company, Saltley Worke, Birmingham. About 4d. per foot.

KROC.—You might try adding a few drops of iodine solution made by dissolving 1 part of iodine in 50 of alcohol and 50 of water. This will lessen the contrast, and by using a developer weak in iron you could probably get a ghost of an image out, then by washing and using a well-restrained and strong-in-iron developer you would be able to get density. To focus in a dull light the best thing you can do is to oil the screen, and use an eye piece. Nothing else will help you unless you put a candle or lamp very near the subject to be copied, then focus.

E. A. D.—Smart, chemist, in High Street, and John Harman, the enlarger, would probably let you use dark-room. The silver stains are practically iridescent fog, and nothing will prevent it.

A. BONSALL.—We regret we cannot insert your letter.

A WORKING MAN.—Your plates were received in hundreds of small pieces, but judging from what we could see we should say that all were over-exposed and over-developed. Try reducing the exposure a little and reduce the quantity of the alkali in the developer, and add more bromide to it, and let us hear from you again.

T. DAVIES.—You do not state whether you want pyro or what. Try the following:—

	I.	
Pyro		60 gr.
Sodium sulphite		360 ,,
Citric acid		10 ,,
Water		10 oz.
	II.	
Carbonate of soda		360 gr.
Water		10 ,,
Potassium bromide		20 ,,

Mix in equal parts.

RHEINSTEIN.—(1) Too much foreground and over-printed. (2) Over-printed. (3) Too much foreground and wants a bit more each side. (4) Slightly over-printed. (5) Good. (6) Over-printed, and we should cut off the group in the middle of foreground. All your prints show careful work, with the exception that every one is over-printed. Never print in the sun if you can help it, as it flattens the whole of the picture. Try again and let us see some more work; this certainly does you credit.

G. W. M.—Thanks for pointing out the error. It should read: Solution of chloride of gold 1:1,000, 300 parts, which reduces the strength enormously. We have not tried the bath, but Balagny states that it will give all the tones of albumenised paper.

G. A. SAVAGE.—Fallowfield, 146, Charing Cross Road, or Adams, 26, Charing CrossRoad, or Fitch, 84, Angell Road, Brixton. Prices, 9 × 7, 1s.; 12 × 10, 2s.; 15 × 12, 2s. 9d. We hope to send certificate next week.

E. TRAVERS HAWES.—Allowing the prints to lie too long in the washing waters will cause the yellow stain sometimes. Try placing the prints into salt and water 1:20 when they come from the printing frame, and be sure your toning and fixing baths are alkaline. The stain would probably work through with a watery mountant.

A. J. JEFFREYS.—The Secretary, Photographic Salon, 215, Shafteshury Avenus, W.C.

A. P. O'BRIEN.—The best thing to do is to soak the negatives in water until soft, and then reduce the fog with ferridcyanide of potash and hypo, taking care not to carry the process too far so as to remove the image.

C. B. MOORE.—An open class ie ons which is open generally to amateurs and professionals alike and not confined to either, or to members of a particular society. You would not, however, be permitted to send in a print which had been mecalled in an amateur class because the class was open to all amateurs and not confined to the members of a society.

EXPOSURE METER.—(1) If you have a companion with you you might get him to light a match and then focus this, or else use a small folding lantern with one side constructed of white opal glass with a figure or something painted on it in black which you could focus easily. A table has been published which avoids all this trouble, but you could easily construct one yourself by setting your camera up, racking the lens out to its equivalent focus and noting the distance in focus with each stop. But we will try and find the table for you. (2) We have used the meter with marked success, during our holidays this summer, for interior work. You will find that if you require an exposure of, let us say, one hour with *f*/22 and you give it half an hour with this aperture and then remove the stop and let the lens work at full aperture or *f*/11 for a proportionately shorter time, that you will get much better exposed plates, and the sharpness suffers but little, if at all.

GEO. RILEY.—A saturated solution is one which contains as much of the salt as can be dissolved at a certain temperature. It is a very haphazard and rule-of-thumb method of working, as the strength of a saturated solution varies continually with the temperature. Yes, the cause of your solution turning colour so quickly is due to your having had the bottle open some time before dissolving the pyro. The only thing the coloured solution will do is to stain the negatives slightly. There is no proof that the sulphite of soda solution loses its strength so far as accelerating goee, though it may lose part of its anti-staining properties because some of the sulphite becomes oxidised into sulphate. Always glad to help you.

F. W. WALTER.—We would confirm your liking and advise you to get that washer.

E. P. VULLIAMY.—We should say that your plates were underexposed and we would suggest your using a yellow screen and isochromatic plates, but we will write you further.

AULD REEKIE.—(1) Good. (2) The face and head wants painting over on the back, over the negative with rather deep orange or red paint, so as to make it lighter and thus throw it up from the background. (3) Good. (4) Very good. (5) Fair. (6) Decidedly better than 5. (7 and 8) Both very good. It is a pity you did not compete in the "At Home" Competition, as you would certainly have come up well to the front. We should like to see you adopt the matt surface paper, as it softens the prints down very much. You certainly should enter in our competitions, and ought to score soon.

R. C. DAWES.—Thanks for your kindly letter, but what are we to do? We had an artist to judge, with two photographers. You are under the disadvantage of not seeing the original prints. However, we are glad of your criticism, but may we suggest that in your own print you signally fail in artistic treatment, let us call it, of an artistic selection. Surely your distance is far too sharp, and the sides far too fuzzy, and there is a flatness and want of atmosphere in it which may be due to under-exposure or the particular plate you are using, tending to give a black and white negative. Surely too it would have been better to have included the end of the bend on the left, and have you not four distinct lines nearly all parallel in the fence and ridges? We smoothed down what was the actual comment on your print by one of the judges. His remark was, a ragged and scrambly botch-potch. We do not think that one of the cleverest artists of the day can possibly have put his easel where your camera is; if he did ann made a picture of it, one cannot help saying that photography certainly fails utterly here. We are always glad to receive such letters as yours, even although we do not always agree with the opinions expressed, and we hope that we shall see more of your work and hear more of you.

A. GALLAWAY.—We should certainly have put the fault down to the keeping of the plates, but on the one with the boat there is a distinct, sharply defined line to be seen in the sky above the boat, which is not due to this cause. We are therefore tempted to say that it is due to your own fault, somehow, though we cannot exactly say what. The negatives are nice and soft, but we should have preferred them if more yellow. You have a tendency to include far more foreground than is really wanted. Do you want negatives back?

BLANCHE.—We can hardly express an opinion without seeing a negative. Can you send one up? Ives has stated that he has found that rocking a dish during development caused the sides to be denser than the centre of the negative.

H. S. W.—The best method of washing negatives is film downwards, but if you cannot spare the room, place the negatives in a rack on the slant. If you have a large dish about 15 by 12 you can easily arrange your negatives film downwards, supporting them only by the corners. About twelve changes of water, with ten minutes' interval, would be about right.

G. B. H.—Pyro stains are very difficult to remove from cloth. Try oxalic acid and citric acid, if this will not do it you will have to give it up as a bad job.

H. D. LINCOLN.—In the first place you do not print deep enough. As soon as you have as many prints as you want to tone, set to work as follows. Get three clean dishes. In the first put salt and water 1:20, put your prints in this, and keep on the move for ten minutes, pour off the solution, add fresh salt solution, keep moving for a minute or two, pour off and wash twice. Then place the prints in the toning bath, which must be alkaline; when on looking through the prints you find they have lost nearly all the red in the deepest shadows, take out and put into the third dish, which must be filled with salt and water; when you have toned all the prints, put away the toning bath, and get ready to fix. The fixing bath should have been made up at least twenty-four hours and should be alkaline. Then fix and wash, and write and let us know how you get on.

C. BRIGGS.—The stains are caused by the print having come into contact with pyro or dirty dishes somehow. It is over-printed, and the distance a little too dark, otherwise all right.

G. F. B.—We do not happen to know the church, but do not choose sunlight if you can avoid it; we should be inclined to give about half an hour in a bright diffused light. The spots in your print are caused by its coming in contact with bits of pyro or metal, it is under-printed in too bright a light, has too much foreground, and the trees would have been better to one side rather than in the centre as they now are. Let us know what developer you use for your bromide paper, and send up a print if you can.

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 467. Vol. XVIII.] FRIDAY, SEPTEMBER 15, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

Our Views.—New Entry Forms—Subscribers Only to Compete—*A. P.* Prize Slides—Photography in Barbados—Photo-Bibliography—The Professionals' Lament—Stanley Show—The Judges' Conference—Our Annual Lantern Slide Competition.

Flotsam and Jetsam, by Anchorite.

Articles.—General and Photographic Chemistry (Conrad)—A New Fixing Agent—Pictorial Photography (Wall)—Half-tone Blocks for Printing (Wilkinson)—Photomechanical Print Procedure (Husnik)—Lantern Slide Making (Child Bayley.)

Holiday Resorts—West Sussex Quadrilateral.

Apparatus.—Perken, Son, and Rayment's Photo-Micro Camera—Obernetter Perutz Films.

Our Town Traveller.—The European Blair Company, Limited.

Societies' Notes.

Societies' Meetings.—Aston—Brixton—Hackney—Leeds—South London—Tunbridge Wells.

Editorial Department—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

Terms of Subscription—

United Kingdom.....	Six Months,	5s. 6d.	 Twelve Months,		10s. 10d.
Postal Union	,, ,,	6s. 6d	,, ,,		13s. 0d.
Out of Postal Union ..	,, ,,	7s. 9d.....	,, ,,		15s. 3d.

Trade Advertisements *are received up to Tuesday morning.*

Publishing Department.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Amateur Photographer" Monthly Print Competition, No. 52, Hand-Camera Work.—Latest day, September 18th.—*Prizes:* Silver and Bronze Medal, with ribbon and clasp. One print to be sent in. Entry forms, etc., on receipt of stamped envelope. Address: Editor, Amateur Photographer, 1, Creed Lane, E.C. (Prizes will be announced and prints reproduced and criticised in the Amateur Photographer Supplement, October 6th, 1893.)

In order to save our readers and ourselves some trouble, we have decided to print each week, on one of our advertisement pages, an entry form for our monthly competitions, and these must alone be used for the future. We have also decided that competitors must send in all the entry forms with their prints, though only one need be filled up.

We have been compelled to do this so as to limit our competitions to readers of our paper, as one or two instances have come to our notice that those who do not take in the paper compete. This plan will also be a saving to *bona-fide* subscribers, as with the present plan they have to spend twopence to obtain an entry form.

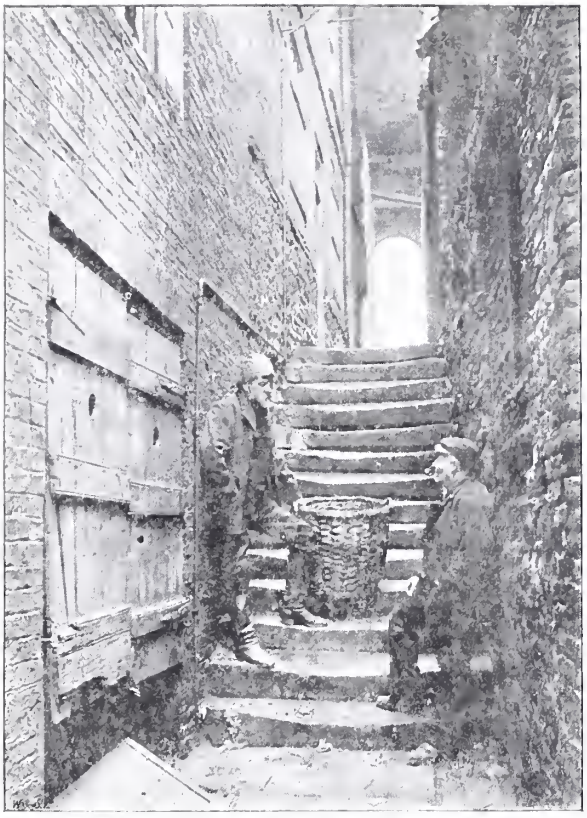
We again call the attention of hon. secretaries of photographic societies to the necessity of early application for our Prize Slides. We shall send in the course of the week each one an application form, which must be filled up and returned to us within three days, so that we may be enabled to fix the itinerary of the slides.

The recent spell of hot weather has by no means been in all cases a boon to photographers. Long washing of negatives has led to innumerable spots and markings of various kinds, which, as usual with such things, always make their appearance in some important part of the picture. We have had quite an influx of letters about mysterious markings, which in most cases can be ascribed merely to the heat. But we are not quite so badly off as they seem to be in Barbados, judging from the following letter, which appeared in the *English Mechanic*, from Major Battersby:—

"Photography, in this climate, is trying to the temper. The light is perfection, but the damp heat produces new effects every now and then which are not provided for in the text-books. Once I found the gelatine fairly melted on a plate *before* I came to develop it. I found the pyro developer the only one which is satisfactory in the hot season, owing to the tanning action it has upon the gelatine, which renders the film strong. Ammonia is by far the best alkali for the plates I use; but colour-fog is an enormous drawback. It seems to depend greatly upon the temperature. Soda brings out a fair amount of detail, and avoids colour-fog, but I find the film gets into a queer rippled, warped condition when I develop with this alkali, and the alum bath, if prolonged, causes minute blisters to rise all over the film. I should think there is scarcely a possible difficulty that does not occur in a damp heat of 81 deg. to 90 deg. Fortunately, dry plates are cheap—phenomenally cheap, I think. Where the profit comes in upon them, and how the workers are paid, I cannot imagine."

At the meeting of the Library Association of the United Kingdom at Aberdeen last week, Dr. Garnett, the President,

referred to the employment of photography as an auxiliary to bibliography, which was broached in 1877 by the late Mr. Henry Stevens, who in a paper suggested certain ideas which were, however, so Dr. Garnett said, more adapted to private than to public enterprise, though "they led up directly to another matter of much greater importance, which he had himself the honour of bringing before the Dublin Conference—the feasibility of making book-photography national by the creation of a photographic department at the British Museum. He need not repeat at length what was then said by himself and other speakers respecting the immense advantage of providing a ready and cheap means for the reproduction of books in facsimile, by which rare books and perishing manuscripts could be multiplied to any extent; by which press copies could be provided at a nominal expense for anything that it was desired to reprint; by which legal documents could be placed beyond



"A CRACK ON THE OLDEN DAYS." *Andrew Peddie.*
"Photography at Home" Competition. FIRST BRONZE MEDAL.

the reach of injury, and the vexed question of the custody of parish registers solved for ever; by which a great system of international exchange could be established for the historical manuscripts of all countries. The one point which could not be too often repeated or enforced was that the essence of the scheme consisted in the abolition of the private photographer, at present an inevitable and most useful individual, but who was sadly in the way of larger public interests. So long as a private profit has to be made, photography cannot be cheap. Transfer this duty to a public officer paid by a public salary, and the chief element of expense would disappear; while the slight expense of this salary and cost of material, if it was thought worth while to insist upon its repayment, would be repaid over and over by a trifling charge imposed upon the public. The Association took the matter up, but nothing tangible had as yet resulted from its efforts, nor could much be fairly expected. They were not a body adapted for public agitation, nor could they be: they had too little influence as individuals; as a corporation they were too dispersed, their general meetings were necessarily infrequent; they wanted organisation and momentum. Nevertheless, very important progress in this direction might be recorded, or he should not have been able to include it in his address. It was due to the University of Oxford, which had established a photographic department in connection with the Bodleian Library and the University Press, which had shown the practicability of the undertaking, and had already rendered important services to private persons and public institutions, the British Museum among the latter. They were as yet far from the ideal, for the University must of necessity make a higher charge than would be requisite in a Government department, which might, indeed, be but nominal. But an important step had been taken, and Oxford would always have the honour of having taken the lead in the systematic application of photography to library purposes, as the sister University had that of having been the first, not merely to print a catalogue, but to keep a catalogue up in print."

WE remember well the announcement made by the Bodleian authorities as to the cheap copies of manuscripts and books, and also the wail of some professionals at the damage that would be done to the business generally by such a cutting of prices, which were only just sufficient to cover the cost of plates and paper. Doubtless by such men Dr. Garnett's words will be read with dismay and indignation, but even if the scheme be adopted by the State we shall still be much worse off than either Austria or Germany, both countries having State-supported photographic institutes, where large commercial orders are undertaken.

WE publish elsewhere the prizes and conditions of the photographic competitions which will be held in conjunction with the Stanley Cycle Show at the Royal Agricultural Hall, Islington, from November 17th to November 25th inclusive. Twenty medals, including five gold ones, are worth competing for, and societies will also have a chance, as a handsome optical lantern will also be offered.

WE are glad to see that as far as possible the conditions are in accord with the recommendations of the conference of the judges, and that "the awards are placed in the hands of the judges, and they have full power to withhold any of them." The judges' names will probably be announced next week.

WE would again remind our readers that our Annual Lantern-slide Competition closes the end of this month, and the following are the classes and prizes:

PRIZES:—Gold, silver, and bronze medals, and certificates in each class. Competitors may enter one or all classes; each set must consist of six slides, and a "lantern-slide portrait" of him or her self. Class 1—Landscape, with or without figures. Class 2—Sea pieces and river scenery. Class 3—Portraiture and figure studies, to include indoor or outdoor pictures. Class 4—Architecture, interior or exterior. Class 5—Instantaneous work. Champion Class—Any subjects, limited to past prize-winners. NOTE.—Every competitor must send descriptive notes. Past prize-winners will be awarded "Niepce" or progressive medals, *should they win a medal of the same value as that which they have been awarded in past lantern slide competitions.* Past prize-winners of the gold medal are only allowed to compete in the Champion Class, but past winners of silver and bronze medals may compete in the Champion as well as the ordinary class. All slides must be received on or before September 30th, 1893.

CONDITIONS.—The prize slides are to become the property of the proprietors of the AMATEUR PHOTOGRAPHER, and will be available for loan to photographic societies and others on and after October 14th. Early application should be made for them. No slide that has been previously awarded a prize in the AMATEUR PHOTO-

GRAPHER Lantern Slide Competition, nor a slide from any negative a print from which has previously taken a prize, can be entered in this competition. The judges shall be at liberty to withhold any award should they think fit. The slides must have the title legibly written on the mount, and must be numbered in accordance with the particulars given on the entry form. The original negatives as well as the lantern slides must be the work of the competitor, who must be a *bona-fide* amateur photographer. Each set of slides must be accompanied with descriptive notes. The slides must be endorsed "Lantern Slide Competition," and sent to Editor, AMATEUR PHOTOGRAPHER, 1, Creed Lane, London, E.C.

Flotsam and Jetsam.

ANOTHER reference of Ruskin's to photography was promised a while ago. Here it is, taken, like the other, from the second series of "Selections" from his writings. It is, perhaps, even more interesting than the former reference, though it reads somewhat oddly now, when every boy who has cared to spend a penny in a certain shop in the Strand has seen the result of the experiment as to which Ruskin did not know whether it had been tried or not.

THAT experiment is simply the photographing of objects in motion, the possibility of which has been so amply and beautifully demonstrated by Herr Anschütz and others. Ruskin, dwelling, in "The Eagle's Nest," on the necessity of invention in art, points out that it is impossible for the artist to adjust drapery on a statue in such a way that it will look like drapery on a living and moving person.

HE proceeds: "If you had your photographic plate ready and could photograph—I don't know if it has been tried—girls, like waves, as they move, you would get what was indeed lovely." Everyone who has seen photographs of the dancing girls, for instance, will agree with this dictum of the master's. In this, art owes a good deal to photography.

BUT it follows that no photograph of draped and arranged figures can ever be a picture in Ruskin's sense. And also that photography has limitations in another direction, as he proceeds to show: "Anything more beautiful than the photographs of the valley of Chamounix now in your printsellers' windows, cannot be conceived. For geographical and geological purposes, they are worth anything; for art purposes, worth—a good deal less than zero."

THERE is apparently something about a camera which Bruin does not like. So at least we gather from a story of the *ben trovato* order, which a Tyrolese photographer tells. He was photographing a group of tourists on the edge of a pine forest, and when he came to develop the plate, to his amazement there appeared upon it the image of a big bear shambling off as fast as his legs would carry him into the denser part of the wood.

IT was not modesty, for modesty, so far as we know, is not one of Bruin's characteristics. Probably he imagined the camera, with its uncanny appearance, was another of those deadly weapons which that strange, two-legged creature, man, sometimes brought against him, and would presently explode with a loud report and leave him feeling very sore, unless he got out of the way. It would be interesting to have a clear statement of the pleasant pastime of shooting from the point of view of the shot.

Chums adds another to the already long list of royalties addicted to amateur photography in the person of the Prince of Naples, and tells an amusing story about him. He was at Chieff Station one day, his faithful camera with him, when he heard the familiar "click," and, looking round, saw he had been captured by a Kodak in the hands of an American boy, who did not disguise his glee at his success.

Chums says that, "like most amateurs, the Prince was disgusted at being caught napping." Is this so? Do amateurs regard one another as natural enemies? We should rather think that the Prince's disgust, if it existed, was due to the too openly displayed joy of the little Yankee, they have such an irritating way of showing their glee when they have done, or think they have done, a smart thing.

BUT this particular boy was a past master of smartness. He slipped out of the station and caught the Prince again as he issued from the station gates. Result, more grins and chagrin.

WE all know the itinerant photographer at the seaside, his ingratiating and flattering ways, and his most unflattering photographs. An evening paper has been interviewing him, and sets him in a very pleasant frame as a whole. He is above all things a philosopher and a judge of character, even though he does arrange his victims in a row with their hands all on their knees, and their brows drawn as they scowl and blink in the full blaze of the sunlight that pours upon them.

BUT nothing daunts the marine artist. He has had a magnificent time of it this year, and he sings quite a pæan to his interviewer. "The profession is as sound as Beachy Head yonder, and I'll back the wet collodion process against all others Edison or any of 'em may invent for seaside work."

ANCHORITE.

Exhibitions.

SOCIETY.	ENTRIES CLOSE.	OPENS.	CLOSES.	ADDRESS OF SECRETARY.
Hove Camera Club	—	Sept. 20	Sept. 21	H. Emery, 142, Church Road, Hove.
P. S. G. B.	Sept. 12	Sept. 25	Nov. 15	R. Child-Bayley, 50, Gt. Russell St., W.C.
Hamburg	—	Oct. 1	Oct. 31	Das Ausstellunge Committe, 33, Schwanenwik, Hamburg.
Photographic Salon	Sept. 27	Oct. 9	Nov. 11	Sec., 215, Shaftesbury Avenue, W.C.
East London	Oct. 10	—	—	W. R. Gould, 61, Gibraltar Walk, E.
Hackney	Sept. 30	Oct. 17	Oct. 19	W. Fenton Jones, 12, King Edward Road, N.E.
South London...	—	Nov. 7	Nov. 11	C. H. Oakden, 53, Melbourne Grove, Dulwich, S.E.
Leytonstone Camera Club ...	—	Nov. 20	Nov. 25	A.E. Pailey, Rose Bank, South-west Road, Leytonstone.
Stanley Club	Oct. 31	Nov. 17	Nov. 25	W. D. Welford, 57 Chancery Lane, E.C.
Madras	—	Dec.	—	Hon Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28 1894	113, West 38th Street, New York.

Reviews.

Rathgeber fur Anfanger in Photographieren. By Ludwig David. Published by Wilhelm Knapp, Halle-a-S.

The second edition of this little beginner's guide has been thoroughly revised and brought up to date. It contains reliable information on apparatus and the various processes and also a negative register and some labels. The exposure table recommended is that of Elliott and Sons, of Barnet, which has already appeared in our columns. The frontispiece is a phototint reproduction of a negative on thin paper, which gives one a very good idea of what a negative should be like.

A NEW FIXING AGENT.

R. E. LIESEGANG read an important paper at the recent congress of the International Union at Geneva which treated of Thiosinamine, which he proposes as a new fixing agent. Dr. Liesegang points out that cyanide of potassium, which is a very good solvent of the haloid salts of silver, is practically debarred on account of its poisonous properties. Ammonia smells very strongly and attacks both paper and size. Alkaline chlorides and even the chlorides of other metals dissolve chloride of silver, but only to a small extent. Sulphocyanido of potassium cannot be used because the sulpho salt of silver is precipitated on washing with water. Hyposulphite of soda is practically then the only fixing agent.

One of the unpleasant properties of hyposulphite of silver is the fact that the smallest quantity of acid sets free sulphur, and the baneful action of this on the silver image is too well known. If, however, this decomposition and sulphur toning has been avoided by careful manipulation, there still remains the fact that every trace of the fixing salt has to be removed by very careful washing. That a fixing salt which did not at least possess one of these properties would be a great boon cannot be denied.

Thiosinamine, so far as Liesegang's preliminary experiments go, appears to be free from both faults. It is an organic substance of the composition of $CSNH_2NHC_3H_5$, and is formed by the action of ammonia on oil of mustard. This compound, which is also known under the name of allyl-sulph-urea, crystallises in colourless crystals which are without smell and are easily soluble in alcohol and water. The aqueous solution removes the silver salt from a gelatino-chloride plate as quickly as hyposulphite of soda. Bromide of silver dissolves a little more slowly but still completely.

Chloride of silver paper prints are completely fixed in four minutes in a 1 per cent. solution. If 0·1 per cent. of chloride of gold be added to the solution an energetic toning and fixing bath is obtained. Aristotype prints treated with this have greater depth than platinum prints. For warm tones the proportion of gold should be decreased.

Thiosinamine can be mixed with an equal quantity of concentrated hydrochloric or other acid without decomposition and without its solvent power being reduced. Liesegang naturally does not recommend the use of so strongly acid a solution, but mentions this merely to show the advantage over hyposulphito of soda.

It may also be mixed with alum or salt. But alkalies, which as a rule are quite unnecessary, should not be added, as such a mixture blackens bromide or chloride of silver without dissolving it.

On the action of thiosinamine on the permanency of the mage when left behind by insufficient washing, Liesegang cannot at present speak, but he has prints which were only superficially rinsed after fixing, and which show no change after twenty days. If this should be confirmed by longer observation, it will be yet another great advantage over hyposulphite of soda.

Unfortunately, the price of thiosinamine is high, about 96s. for 2¼lbs, but should a demand for it arise its production would soon be cheapened.—*Photo. Corresp.*

Catalogues.

THE "ONWARD" OPTICAL LANTERN DEPOT, 124, 126, Portland Street, Manchester.

This firm has sent us a neat descriptive list of the new temperance sets of lantern slides they are issuing, all of which are prepared from life models. We also note that they are prepared to undertake colouring for the trade on special terms, as they employ their own artists.

General and Photographic Chemistry.—XX.

BY E. C. CONRAD, F.C.S.

THE CARBO-HYDRATES.

(*Continued from page* 96.)

Milk Sugar, Lactin, Lactose.—Oc.: In milk. M.: By evaporating whey to a syrup and purifying with charcoal. P.: Forms white, clear four-sided prisms. Is only slightly soluble in water, and has a faint, sweet, gritty taste. On fermentation yields lactic acid and alcohol.

Maltose.—This sugar is produced by the action of malt extract on starch, and is converted into grape sugar by acids.

Starch, Fecula, Amidin, Amylose.—Oc.: In all plants, and very abundantly in many roots, tubers, and seeds. M.: From potatoes; by rasping or grinding, and washing the resulting pulp on a fine sieve, the tissue is retained, while the starch passes through and settles down as a white powder. Starch is manufactured from grain by steeping for some time in water, which gradually changes the sugar in the seed, into lactic acid, which attacks and partially removes the gluten, thus facilitating the removal of the starch by mechanical means; when prepared from rice, dilute caustic soda is used to remove the glutenous matter. Starch prepared from the roots of special plants is sold under such distinct names as *arrowroot, sago, tapioca*, etc. P.: Although starch from any plant is the same chemically, yet the granules vary in size, shape, and marking, according to the source from which they are obtained. Starch is quite insoluble in alcohol and cold water, but on heating the granules burst and a gelatinous mass is produced. U.: Starch is a most important article of food. U. P.: For mounting photographs and as a size for papers. *Test.*—A weak solution of iodine produces a fine blue colour with starch; this is a very delicate reaction, the colour is destroyed by heat, excess of chlorine, sulphurous acid and its salts, and also by the hyposulphites.

Dextrin, British Gum.—M.: By boiling a mixture of potato-starch, water, and dilute sulphuric acid for some hours, adding chalk to neutralise the acid, filtering and evaporating off the excess of water. By heating dry potato-starch to about 400° C. P.: Dextrin has the same composition as starch, but is soluble in cold water. It is a yellow gum-like substance. On boiling with dilute acids for some time dextrin is converted into glucose. U.: As a substitute for gum.

Cellulose, Lignin.—Oc.: In all plants and vegetables, of which it forms a larger proportion of the solid parts. With other substances it forms *ligneous* or woody tissue. Cotton wool is a very pure variety of cellulose. P.: Cellulose has the same percentage composition as starch, $C_{18}H_{30}O_{15}(C_6H_{10}O_5 \times 3)$, is tasteless, insoluble in water or alcohol, and not attacked by dilute acids or alkalies. *Tests:* Iodine gives no colour with cellulose. On boiling with zinc chloride cellulose is changed to amyloid, which takes a blue colour with iodine. A solution of cupric oxide in ammonia dissolves cellulose, which is again precipitated by adding acids.

Action of Strong Acids on Cellulose.—Sulphuric acid added slowly to linen shreds or lint (avoiding a rise of temperature, which would produce charring) converts the cellulose of which they are nearly entirely composed, into a colourless, adhesive substance resembling dextrin, which, on boiling with water for some time, produces glucose. Unsized paper dipped into a strong solution of sulphuric acid, and afterwards washed with water and dilute ammonia,

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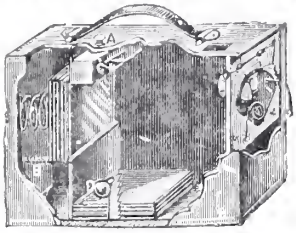
3¼ by 3¼	4¼ by 3¼	5 by 4	6½ by 4¾	8 by 5	8½ by 6½	10 by 8	12 by 10
1/6	**2/-**	**3/-**	**4/6**	**6/-**	**8/-**	**12/-**	**18/-**

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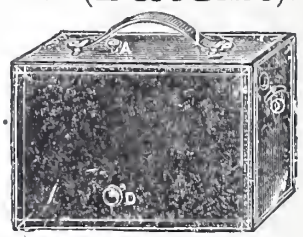


Weight 3¼ lbs. Two movements only. Iris Stop to Lens. Carries 12 Plates.

COMPLETE WITH LENS, SHUTTER FOR TIME OR INSTANTANEOUS, & VIEW FINDER.

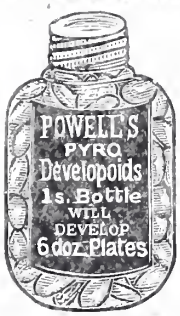
Ebonized and Polished, £3 3s. Leather Covered, £3 10s. 6d.

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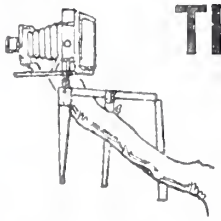
Powell's Pyro "Developoids," or Developing Pellets, introduced in 1889. The handiest of all Developers. A **1s.** Bottle will develop 6 doz. plates, and may be carried in the waistcoat pocket.

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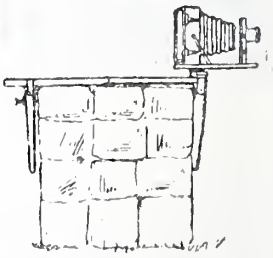


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is changed to so-called *parchment paper*. Nitric acid acting on starch or cellulose produces a colourless jelly which with water gives a white insoluble curdy substance called *xyloidin*, $C_{18}H_{27}(NO_2)_3O_{15}$. A mixture of strong sulphuric and nitric acids acting on cotton wool produces an explosive substance, burning without smoke or residue at 150° C. called *pyroxylin or guncotton*, $C_{18}H_{21}(NO_2)_9O_{15}$. By varying the strength of the acids and the time of their action several varieties of pyroxylin can be produced, differing in the number of molecules of NO_2 that have replaced hydrogen in the cellulose. One variety dissolved in alcohol and ether is called *collodion*, used as an airtight covering for wounds, and in photography as a vehicle for holding the haloid salts in the wet-plate process, and also as an enamel.

Celluloid is produced by dissolving a variety of pyroxylin in wood naphtha or benzol with camphor, heating to evaporate the solvent and compressing or rolling the residue into the required shapes. Celluloid is used as a substitute for ivory, and for glass in photographic films.

Gums.—Oc.: As an exudation from various species of trees, such as the acacia, pine, cherry, etc. P.: In composition they are allied to starches and the sugars, but occur as metallic salts of various organic acids with silica, water, etc.

Gum Arabic or Senegal.—Oc.: From the acacia of Turkey, India, Senegal, etc. P.: Fruit-yellow colour, odourless, insoluble in alcohol or ether, soluble in water. U.: As a mountant, the solution or mucilage is preserved by the addition of salicylic acid.

TURPENTINE RESINS AND CAMPHORS.

Turpentine, $C_{10}H_{16}$.—Oc.: In the wood, bark, etc., of pines and firs. M.: By making incisions in the trees and distilling the oleo-resinous juice with water. P.: Pure turpentine oil is a colourless, mobile liquid of an aromatic odour; S.G., 0·864, and boils about 160° C. It is insoluble in water, but soluble in alcohol, ether, and carbon-bisulphide. Turpentine acts as a solvent for sulphur, phosphorus, oils, and resins. Turpentine combines with nitric acid, chlorine, bromine, and iodine with great energy, often taking fire. Turpentine exposed to the air absorbs oxygen, and acquires oxidising properties. The chemical and physical properties of turpentine differ with the source from which it is obtained. The crude commercial oil is sold as turpentine, or oil of turpentine, the redistilled as spirits of turpentine. U.: In paints and varnishes.

Resin is the substance remaining after the distillation of turpentine from the oleo-resinous juice, and is a mixture of sylvic and abietic acids. P.: Resin varies with the turpentine oil from which it is obtained from transparent to opaque and in colour from pale amber to black. It is soluble in turpentine and alcohol. U.: In soap-making. U. P.: For varnish making.

Lac, Sticklac, Seedlac, Shellac.—Oc.: It is deposited by the female lac insect on the twigs of trees as a covering for her eggs. The crude sticklac is purified by rolling, washing, and melting. P.: Lac is reddish-brown in colour, and if bleached by chlorine as an opaque, white, brittle mass. Soluble in alcohol, and in solutions of caustic soda, ammonia, borax, and carbonate of soda. U.: In hat-making. U. P.: For varnishes.

Sandarac, Gum Juniper. A brittle, pale yellow resin, soluble in alcohol, ether, and benzol; employed with lac in varnish making.

Dammar, Gum Dammar.—A resinous substance, of which there are several varieties, mostly of a yellow colour; soluble in alcohol, chloroform, turpentine; employed in varnishes and retouching medium.

Copal.—This resin occurs (1) as a fresh variety gathered direct from the trees, (2) as a fossil variety in blue clay; soluble in alcohol in the presence of camphor.

Amber.—A fossil resin, hard and brittle, of a yellow colour. It is found on the shores of the Baltic Sea. Soluble in chloroform or benzole.

Balsams is the name given to a class of bodies which are in fact natural varnishes, being mixtures of resins with volatile oils, and sometimes benzoic or other acids. The following are the most important: *Canada Balsam.*—The juice of the balsam fir, a pale yellow, clear, viscid, resinous substance with a pleasant smell. It mixes with alcohol in all proportions, but is insoluble in water. U.: For varnish making.

Peru balsam and *gum benzoin* are also examples.

India-rubber, Caoutchouc.—The thick milky juice of several species of tropical trees; when quite pure it is of a white colour. P.: Elastic, soluble in turpentine, pure ether, and petroleum, but insoluble in water or alcohol. It is not affected by most chemical agents. Combined with sulphur in variable proportions, it forms *vulcanised rubber, vulcanite*, and *ebonite*.

Gutta-percha.—A hardened, milky juice obtained from malacca; it is similar to caoutchouc, from which it differs in being harder and less elastic. It is especially useful as a covering for wires, etc., being a good electrical insulator.

Camphor, Laurel Camphor, $C_{10}H_{10}O$. – Oc.: In the wood of the camphor laurel of china. M.: By distilling the wood with water and purifying by sublimation. P.: Camphor is a tough, colourless, translucent mass, having a strong smell and taste; S.G., 0·985; melts at 175° C.; distils at 205° C.; soluble in alcohol, ether, acetic acid, volatile oils, and slightly in water. U. P.: In the manufacture of celluloid and as a preservative for gelatine. Other camphors are *Borneol, or Borneo Camphor*, $C_{10}H_{18}O$, and *Menthol* or *Mint Camphor*, $C_{10}H_{20}O$.

Bitumen, Asphaltum, Pitch, a substance of indefinite composition found on the shores of the Dead Sea, and in Syria, Peru, etc. It occurs in brownish-black lumps having a shiny fracture. Soluble in turpentine, benzole, chloroform, etc. U. P.: The solubility of this substance being affected by light has caused it to be used in many photo-mechanical processes.

(*To be continued.*)

Pictorial Photography; its Principles and Practice.

By A. H. Wall.

CHAPTER IV.—ON THE COMBINATION OF TONES.

(*Continued.*)

Presuming that I have said enough of lines to indicate their importance as elements of composition, and so leaving them for further consideration in a future chapter when angles, straight lines, and circles may be in like way dealt with, let us consider the part tones play in a composition.

I dare say some of my readers will be surprised to find art is not quite the simple, easy thing they once thought it. "The axiom that the most perfect art is that in which the art is most concealed," as, in his "Handbook for Young Painters," C. R. Leslie, R.A., says, "is directed, I apprehend, against an ostentatious display of the means by which the end is accomplished, and does not imply that we are to be cheated into a belief of the artist having effected his purpose by a happy chance, or by such extraordinary gifts as have rendered study and pains unnecessary. On the contrary, we always appreciate and therefore enjoy a picture the more in proportion as we

discover ourselves, or are shown by others, the why and wherefore of its excellences."

If lines and outlines have their various associated ideas, and when grouped together do so much for a picture's general effect, most assuredly like grouping of Light and Shade Tones are not less powerful or less deserving of very careful study. To introduce into a noonday landscape a group or a set of tones belonging to a misty evening or morning, as inartistic focussing, imperfect exposure or development often does, is, obviously, to be untrue and inartistic. Some tones blending softly and imperceptibly by their gradations one into the other, convey ideas of sweet peacefulness and gentle, retiring qualities. This also will hardly be denied. Nor can I conceive anyone refusing to believe that more violently abrupt contrasting tones would convey ideas of bold prominence-seeking qualities. Nor less practically important, again, is the introduction of tones as harmonising elements where they are grouped together without reference to meanings, as notes of music are without words, and solely with reference to that music of the eye which is quite as real as music which addresses the ear. The loud, stirring strains of a warlike march, and the soft languishing notes of a love song, the solemnity of the anthem and the plaintiveness of a mournful ballad, would be as palpably what they are if they were never sung or never marched to. So in a picture, tones are composed to express not only sentiment and feelings that accord with its subject, but pleasing combinations that in one way or another delight the eye. Artists thus find in them wonderful additions to their powers.

Years ago I often used to hear certain fellows talk about exposing for this or that effect of light and shade, because they liked such effects. They never could be made to understand that they should really expose for natural effects only; that in one picture masses of strong darks got by under-exposure and over-development would be fatal to strongly diffused light and delicate tender sun shadows, full of softness and reflected lights. They never studied nature; their only studies were chemical, optical, and technical. No matter what the time of day, month, or season chanced to be, they were triumphantly self-glorifying over their negatives being always bright and strong, brilliant and forcibly defined. The test was always this artificial density and transparency. They never looked for subtle gradation of tones, never remembered that what was true and good in one case might in another be bad and false, that when photographs taken under a wide range of varying natural conditions were all alike in the tones of their light and shade, they were necessarily all alike in their falsity to both art and nature. They laughed at my talk about the association of ideas as something fanciful and of no practical value. They admitted that the scream of a railway engine was so unpleasant to the ear that they always called it painful! But they could not tell me why. Was it not because it was associated with the idea of pain? It could not be because it expressed the steam engine's pain. Nor because a scream is always the expression of pain—women scream with rage, and so do certain birds, and we have even heard "screams of wild delight"—but nevertheless we always persist in our belief that a scream is a painful thing to hear, harsh enough in itself as a mere sound, but painful because it indicates extreme agony of mind or body. I have heard in the lonely silence of the wild Australian bush the screaming cry of a night bird or some other animal, perhaps a dingo, that made our blood run cold. And yet it only meant perhaps hunger or thirst, or a signal cry. These things show us how perfectly real the power of associated ideas is, and what nonsense it is to ignore their existence. "A genuine metaphor," says one of my dear old friends—Joseph Kipsey, the widely-admired Newcastle poet—"is always the outcome of something more than mere fancy, and may have the deepest significance. . . . A moan, which is the tone of sorrow, affects the hearer with sorrow; while a groan, or a series of groans, which is the voice of anguish, affects and oppresses the hearer, and may do so to such an extent as to throw him into a state of anguish, and that whether the sound proceeds from a man choking in the gasp of death, or from an old oak straining under the oppressive grasp of the hurricane. Again, a sweet tone puts us into a sweet disposition, a state of things identical with that from which it proceeds, whether from the lips of a beautiful woman or from the mouth of a sweetly-tuned musical instrument. . . . Sound as well as colour and form has its manifold significations." And lines and tones of light and shadow move us in like ways through like causes.

There is another division of our present subject which demands attention. As light and shade are the means whereby we depict forms in a picture, any carelessness in the exposure of a plate, any differences in the tones of a photographic picture, as compared with those of nature, indicate that even the very forms are not truthful. For this reason also it is desirable that the photographer should carefully study nature that he may be able to detect false from truthful representations. If the intermediate tones are not true in a portrait, it is, as a portrait, proportionately untruthful, the forms are altered. If the intermediate tones in a landscape are not true, neither effects of light or shade, or effects of atmosphere can be faithfully and honestly depicted in the resulting photograph. What may be the high light in one harmonious and perfectly truthful combination of tones, between the extreme strengths of light and shade, may be but the half tone of another. Yet in how many negatives of different views taken under all conditions the highest light is *always* as intense as it can be, and the deepest shadow always as nearly as possible black; and how often the real beauty and truthfulness of a picture is in this way exultingly destroyed by an operator who was perfectly ignorant of their presence. No matter whether the illuminating conditions are those of brilliant sunlight, soft, gray daylight, a semi-misty sunrise, or the solemn glory of a deep golden sunset, the results produced by such a mechanical operator never change. Of course, the ability to always secure these satisfying conditions in the negative, in defiance of both art and nature, indicates considerable technical skill and knowledge, but it also indicates the perfect absence of good taste, and study, and accurate observation.

Again, in how many photographs do we see the highest light in a foreground represented by pure white, and the highest light of some object which should have half a mile of atmosphere between it and us quite or very nearly as white. Can this be true in tone, or true in fact, or in any other way true? Does not the mere fact of such a blunder being possible in itself demonstrate the necessity for more photo artistic culture? How often, again, do we see the white sunlit sail of a boat on a lake and the shine of sunlight on the water both rendered in a photograph by patches of pure empty white, as if the whiteness of the one and that of the other had no difference. The tender subtle tones that separated them were altogether lost, merely because the photographer never looked for them in nature, and even if the exposure had been timed accurately enough to catch them, never saw them in his negative.

The photographer who never dreams that it is necessary for him to be critical and observant may hug himself with the idea that he is saving himself labour, but he little thinks what pleasure he sacrifices to his love of ease, what refining influences, what ennobling thoughts, or what lofty aspirations. Hammerton, in his "Painter's Camp," carefully points out why men of his profession should not rely upon photographs, useful as they may be in other ways, as doing away with the necessity of studying nature. "Whoever," he says, "buys a picture, buys it with his eyes open, and it is his own fault if he cannot tell whether it is good or worthless without being told the history of its construction. But a painter who painted from *bought*

photographs, instead of studying nature for himself, would cheat himself out of the study he so missed, and thus be by far the greater loser of the two."

(To be continued.)

The World's Congress Auxiliary

OF THE

WORLD'S COLUMBIAN EXPOSITION.

[The following papers were read at the Congress of Photographers, held at Chicago, in August, 1893.]

PHOTO-MECHANICAL PROCESSES IN ENGLAND—HALF-TONE BLOCKS FOR TYPE PRINTING.

By W. T. Wilkinson, Manchester, England.

To England must be given the honour of being the home of photo-mechanical photography, and a casual glance at the publications using photo-blocks, will show that good use is made of such productions. The gauze used by Fox Talbot in 1854 has given way to perfect ruled screens, which, as a general rule, are made in America.

The old wet collodion process has no rival for the production of the grained negatives, and at present there is little chance of having any. The prints on the metal are usually made in bitumen, some operators using bichromated albumen, especially in dull weather, but this requires great skill, both in the preparation of the film free from dust, as well as in the subsequent rolling up with a sufficiently strong ink resist. Printing the ink image on prepared paper, and subsequently transferring to metal is also practised, but this method requires great lithographic experience to get a good image. The metal used is generally zinc, but some firms use copper.

Line Blocks for Type Printing.

This branch of photo-mechanical work is nearly all done by the etching process, the swelled gelatine method being worked by one firm only, who, however, turn out splendid results. The wet collodion process is here paramount for making negatives, the silvered mirror being used to get the necessary reversal, one or two firms only adhering to the method of turning the plate in the dark-slide. Stripping the film is very seldom practised; when a number of small images are to be put on one sheet of metal, separate exposures are made, the metal plate being resensitised for each print.

Line blocks are produced very cheaply, but there is a constant demand for them, hence they pay in spite of the low price; they are used by the square yard in half-penny papers as well as in very high-class ones.

Photo-Lithography in Line.

Photo-litho transfers are getting into very general use all over the country, firms who a few years ago would not hear of such a thing are now using large numbers of them; but there is one drawback in the difficulty in obtaining good transfers, so few operators know, or will be told, how important it is to keep the ink spare instead of thick, especially in fine work.

The best method of inking up these transfers is to use a glue roller charged with transfer ink thinned with turpentine, a method which I had the honour of first introducing, and as it is simple, easy and efficient, some operators prefer to use the old and clumsy methods of rubbing over the ink with a sponge, or else ink up a stone, place the exposed print upon it and pull through the press; the sponge method yields heavy and uneven transfers, the inked stone gives rotten lines and dirty whites.

In chromo lithography, photo transfers are much used when different sizes of one subject are required; then one drawing or set of stones only are prepared; then from each stone a black pull is taken, this is photographed, put on the stone and printed.

Photo-Lithography in Half-tone.

This process is not very extensively practised, but where it is, very fine work is produced. The best work is done by transfer from a collographic plate, the necessary grain being obtained by using either ferro-cyanide of potassium, or calcium chloride, or both.

Collotype.

This process has been very extensively taken up within the last three years, but there are only about four firms who turn out really good work, simply because the process is starved in initial stage, viz., the negative. Money is lavished on machinery, etc., good wages are paid to the plate-makers and printers, but any one is considered capable of making a dry plate negative; now and again by a fluke a good collotype is turned out, but as for ninety per cent., it is stale, flat, and unprofitable.

This process is essentially a photographer's process, and only those who are capable of constantly making good negatives can insure good collotype prints; the process is simplicity itself given a good negative, but not without.

Photogravure.

England was a short time back very backward with this process simply because of the difficulty of getting men capable of producing the prints from the intaglio plates; now, thanks to the pluck and enterprise of firms like Annan and Swan, London, English photogravure prints hold their own in comparison with any.

Some firms use the Talbot-Klic process, in which the grain is obtained by dusting with finely powdered resin, the resist being a carbon negative, *i.e.*, a pigmented gelatine print from a transparent positive, mounted upon the copper plate and developed thereon.

Other firms use the method of dusting over a gelatine image with a resin in fine powder, and when the image is dry obtain the grain by dissolving out the resin, and then obtain an intaglio plate by electrolysis.

Others again prepare gelatine films with plumbago, etc., of varying degrees of coarseness, which, when exposed to light and developed, yield a granular surfaced image, from which, by the electrotype process, a printing plate can be obtained in copper or steel.

Taken altogether, England has no cause to be ashamed of her photo-mechanical work, and it does not require any great stretch of imagination to say that in the future this satisfaction will be maintained.

THE PHOTO-MECHANIC PRINT PROCEDURE TO THE YEAR 1893.

By Jacob Husnik, Imperial Professor and Member of the Art Institute of Husnik and Hausler, Prague.

The photographic deep-print or copperplate print is represented through the methods which are known under the name "Heliogravure," and already stand on the highest grade of development. It is the same with the Lichtdruck; both processes do not show much improvement since 1870, only in the heliogravure, the secret and well-guarded methods of Dujardin and Baldur of Paris, have been brought to light by a Bohemian by the name of Karl Klic of Vienna. The entire process consists of putting fine asphalte powder equally on a polished copper plate, to be heated, and to develop on the plate a pigment picture, which has come out through illumination under a positive; this is thereafter etched with a solution of chloride of iron. Goupil, in Paris, has practised for a long time a process which requires much retouching. He has added glass powder to gelatine and prepared his own pigment papers, which he lighted (under negatives) and exposed on silver copper plates, and electrotyped the dry relief. The same process has been cultivated by Schreiber in Vienna in 1873, only he took a grained skin of gelatine, which he put between the negative and the pigment paper, and very good half-tone plates are yet in the Imperial State Printing Establishment in Vienna. Dr. E. Albert, in Munich, produced lately a grained gelatine relief with the well-known Runzelgrain of the gelatine (Pretschmanier); the same process was practised in 1870 by Rodriguez and Leipold in Lisbon, but with no success. Obernetter, in Munich, has used a process for many years, which consists of a collodion picture out of iodine of silver, transferred on a copperplate; the silver will reduce itself and etch the copper.

There are now experiments made with a new deep print process. A developed pigment relief in wet condition is powdered with the finest asphalte powder; after drying, the powder is removed, and it remains a grained gelatine relief, which is electrotyped.

The photo-mechanic process for printing presses has made great headway lately, and pen drawings have reached the highest stage of perfection. Half-tone originals must be laid out in lines first, and this is done with the aid of transparent Rasterplates or nets, which have been perfected of late.

The writer of this built a ruling machine four years ago, and obtained faultless nets drawn on glass, which are to be glued or cemented between two glass plates, and which are perfect, and in use in Prague by Husnik and Hausler. Loewy, in America, has the same cemented and perfect nets, and they are generally used Meisenbach, in Munich, was the first man who practised this method with success; after him came Angerer and Goeschel, in Vienna; Goupil, in Paris; Husnik and Hausler, in Prague; and Riffahst, in Berlin. The writer of this has perfected the collotype, and samples are found in all public magazines. At present experiments are made to print three or more colours on the printing press, and particular merit is due to Dr. Vogel in Berlin. His methods are exercised by Kurz in America, and Buchsenschein in Berlin. Up to

date it is not yet perfect; there is need of the clear, green colour, which now holds too much red.

My son, Jaroslaw Husnik, practical chemist, has greatly improved the photographic three-colour print, and faultless pictures are the result, which the firm of Husnik and Hausler executes, and herewith send samples for inspection; also the three clichés for the three ground colours, yellow, blue, and red, with impressions, and other samples, have been mailed separately to your address.

James B. Bradwell, Chairman of the Committee of the World's Congress Auxiliary on a Congress of Photographers, Chicago, Ills., U.S.A.

DEAR SIR,—We take liberty to notify you herewith that we have shipped to your address to-day, an article by Prof. Husnik, prepared for the World's Congress of Photographers; also, separately, the necessary explanation, the gel. reliefs and the clichés for the three-colour print.

We mention that we have enclosed proofs of the gel. reliefs which substitute the make ready on the cylinder of the book press. In relation to the three-colour print we will say that we are prepared to execute this process on a large scale, and are willing to sell to American studios, if desired.

In Europe our process in three-colour print has met with great success, and we are busy filing orders for this reproduction. Our processes will, without doubt, very much interest the American continent, and we would rejoice if you should mention it in the World's Congress.

We will also mention that this process consists of three photo-negatives, one for yellow, one for blue, and one for red, transferred on zinc and etched. This is, as you will see, very simple; there is no need of extra help, and we believe it to be much superior to those of Mr. Kurz, of New York, of which the proofs did not satisfy us at all.

Our gel. reliefs, as a substitute for the make ready on the cylinder, which we mentioned in Prof. Husnik's article, are also in great demand, and would prove successful to American printing establishments, as the work can be done quickly and effectively.

It would be very interesting indeed if you would have those clichés of the three-colour print, which we have sent you, printed in Chicago, with the use of our gel. reliefs, also inclosed; and we would recommend to print the yellow colour first and the red colour last. We have no doubt that this proof would be regarded with high consideration by the Congress.—Very respectfully,

Kgl. Weinberge, July, 1893. HUSNIK AND HAUSLER.

Lantern-Slide Making.

BY R. CHILD BAYLEY.

I.

IT has always been, to a certain extent, a matter of surprise to me that so few amateurs nowadays, no matter how much their bent may lie in the direction of technical and manipulative work, ever attempt, much less habitually practise, plate-making. With so many excellent brands of plates in the market, there is, of course, very little inducement to those who make picture-making their forte, but there is a class of amateur who prides himself upon his self-reliance, who views with contempt the button-presser, and who would lose all pleasure in his work if not allowed to "do the rest," to whom emulsion making should strongly commend itself. Especially should this be so when it is borne in mind that the opinion is still very widespread, that for lantern slides and transparencies generally, in spite of all which the advocates of gelatine may say, there are few methods which equal and none which excel that in which collodion emulsion is employed, a process pre-eminently suited for the amateur plate-maker, and one by which a small quantity of emulsion can be made with as much success as a large. With gelatine emulsions, again, for lantern slides and transparencies, the absence of the many and elaborate precautions necessary to ensure great speed renders their manufacture easy, and an excellent preliminary exercise before taking up the preparation of quicker plates.

Into the comparative merits of the various processes it is outside our province at present to go. Excellent results can be obtained with collodio-bromide as well as with gelatino-chloride and gelatino-bromide, which is the order in which we propose to deal with the processes, leaving one equally fascinating and easy method, the carbon, to be discussed last.

LANTERN SLIDES WITH COLLODION EMULSION.

The process which goes by this name was first described by Messrs. Bolton and Sayce in 1864, although the form in which it is generally worked at present was not known until 1874, in which year W. Bolton gave full particulars of his method of making and using *washed* collodion emulsion. For those who do not care to go to the trouble of making their own emulsion with the chances of failure, for failures are not unknown, it is as well to mention that it is possible to obtain commercially both washed collodion emulsion (Bolton's method) and plates coated with a film said to be prepared after the directions of Canon Beechey. The latter process, involving as it does the employment of a preservative with the evils such a course frequently entails, does not call for more than passing mention, the former being both simple and reliable, while the results are indistinguishable.

To make washed collodion emulsion the following articles are required. From the list given it will be seen that the necessary appliances could hardly be fewer in number or less expensive.

Two 10-oz. bottles with *sound, clean corks.*
One funnel.
One quarter-plate porcelain dish.
A fairly light-tight wooden box which will hold the dish.
A tuft of cotton wool.

To make about seven ounces of emulsion the following chemicals will be required:—

Alcohol	6 oz.
Ether	6 „
Pyroxyline	48 gr.
Ammonium bromide	52 „
Silver nitrate	80 „
Nitric acid	A few drops.

And here at the outset comes the chief difficulty of the process, the selection of suitable materials. To take them in the above order, the alcohol comes first. For small quantities of emulsion such as an amateur would be likely to make, it is best to employ absolute alcohol rather than be troubled with procuring a suitable example out of the many kinds in the market. If it is not thought desirable to use absolute alcohol, which is readily obtainable, and the extra cost of which is not more than a few pence on four ounces, then the next strongest form obtainable should be employed; the methylated spirit at present in the market should on no account be used, but if the former description of methylated alcohol is accessible its use will be found practicable if not too weak.

The above remarks as to strength apply equally to the ether, but that sold as methylated ether, with a specific gravity of ·725, will answer very well. It should be borne in mind that the lower the specific gravity of both of the solvents the better, but that a certain amount of interchangeability is possible, *i.e.*, a strong ether can be employed with a weaker alcohol, and *vice versa.*

The quality of the pyroxyline is a very important matter. It should be of the kind known, rather incorrectly, as high temperature, and when a good sample is obtained a stock should be laid in It is important before doing so to test it with a piece of litmus paper, as high temperature gun cotton, while keeping very well if properly prepared, is subject to spontaneous decomposition if the acids employed in its manufacture have not been thoroughly removed by washing. To keep well it should not give an appreciable reaction with either red or blue litmus. Some samples of pyroxyline, while answering perfectly well in all other respects, form a collodion which has an opalescent appearance while dry. This is a most undesirable feature in an emulsion required for lantern slides, as the opalescence can only be removed by varnishing each slide. As regards the silver nitrate and the nitric acid nothing need be said, but it is most essential to success that the ammonium bromide be both pure and *freshly prepared.*

A very good plan to adopt when it is intended to make small quantities of the emulsion from time to time is to prepare the collodion in bulk. For each ounce of collodion the following proportions should be used:—

Alcohol	½ oz.
Ether	½ „
Pyroxyline	12 gr.

These should be placed in a bottle which allows plenty of room for shaking, vigorously shaken and put aside. When required for use the requisite amount should be decanted from the top without disturbing the bottom more than is necessary, as there is always a little sediment of which it is desirable to get rid.

Four ounces of the above described collodion should be placed in a ten-ounce bottle provided with a good cork, and to it should be added the following solution by degrees, shaking well after each addition:—

Ammonium bromide	52 gr.
Water	80 minims.
Alcohol	6 dram.

When the mixture is effected, the collodion is ready for the sensitive salt to be formed within it by the addition of a solution of silver nitrate, as in gelatine emulsion making. Unlike the latter, however, there is no necessity to do this in semi-darkness, or even in a yellow light. Perfectly clean emulsions can be made by candle-

light, provided the light is not too strong and is not allowed to act upon the emulsion after it has once been washed for too long a time. For example, a bottle of the finished emulsion can be left exposed to gas-light in an ordinary room for a considerable time without any effect that is appreciable upon plates prepared with it. A coated plate, however, it must be remembered, is nothing like so insensitive, although with it the precautions taken for gelatine are much greater than necessary. One thickness of good yellow glass for daylight is all that is required, or a corresponding amount of yellow artificial light may be employed throughout its manufacture.

As is the case with gelatine emulsions, it is important that the bromide present during the reaction should be more than is necessary to combine with the silver. Fifty-two grains of ammonium bromide require for their complete conversion into silver bromide the addition of eighty-nine grains of silver nitrate, so that by adding eighty grains only of this latter salt the ammonium bromide is kept in excess.

Eighty grains of silver nitrate should accordingly be taken and dissolved in eighty minims of water. Solution can be effected without trouble at ordinary temperatures, but if there be any difficulty the mixture may be slightly warmed, which will soon cause the nitrate to dissolve. To this solution three drops of nitric acid should be added, and it must then be dropped into the bromised collodion a few drops at a time, shaking vigorously between each addition. When this has been done a drop of what is now a rich creamy-looking emulsion should be put on a piece of glass and examined by looking through it at a gas flame, when it should appear of a bright ruby colour. If this be the case it may be assumed that the preceding operations have been carried out successfully, and the emulsion put away to *ripen*. For this purpose it is only necessary to wrap up the bottle in a cloth or piece of brown paper to exclude the light and put it away for twenty-four hours, at the end of which period it may be washed.

The washing has for its object the elimination of the ammonium nitrate formed in the collodion by the double decomposition which has taken place, together with the acid and the excess of bromide. The emulsion should be poured into a dish, which dish may be enclosed in a fairly light-tight box and placed aside for a few hours, preferably out of doors. We say preferably out of doors because the odour of the ether as it evaporates is not regarded by everyone as pleasant, and is of a very searching nature, making its presence felt all over any house where the operation may be going on. When the solvents have so far evaporated as to leave the emulsion of a leathery texture it should be soaked in water for some hours, the water being frequently changed, or the dish containing it may be put under the tap and the water allowed to run on it for two or three hours. When the washing is concluded, the pellicle, as it is generally termed when in this condition, has to be dried, which can be done if time is no object spontaneously; when time is short the drying can be greatly facilitated by soaking the pellicle in methylated spirit for some hours, changing the spirit several times and then wringing it out by wrapping the emulsion up in a piece of clean rag. It is important to get it thoroughly dry, and the pellicle then has only to be dissolved in a mixture of equal parts of alcohol and ether; for the proportions given above three and a-half ounces of each will be required to form the finished emulsion, which needs but filtering through a plug of cotton wool placed in a funnel before being used to coat the plates. The solution of the pellicle will take some little time; with occasional shaking it should be complete in twenty-four hours. It is a good plan while filtering, to hinder the evaporation of the ether by covering the top of the funnel over with a piece of glass.

Collodion emulsion thus made will keep in excellent condition indefinitely with no more precautions than are taken by seeing that the cork of the bottle fits tightly, and wrapping the bottle up in brown paper so as to exclude the light as much as possible, although, as we have already said, a little light more or less seems to make no difference. The finished emulsion should be tested by coating a plate, exposing behind a negative one part of which is covered so as to be entirely opaque, and then developing as set forth hereafter. That part of the plate which was behind the opaque portion of the negative should, after development, appear absolutely clear. If it should be fogged in any way the emulsion can be cleared by evaporating down as previously described, soaking in a two per cent. solution of ammonium bromide, to which a few drops of nitric acid have been added, washing, drying, and redissolving the pellicle again. Still, fog is not a common complaint with collodion emulsion. A failure more frequently met with consists in the emulsion gathering into clots when poured upon the plate. This has been said to be due to the adulteration of the ammonium bromide employed with ammonium chloride, but whether this is the case or not does not seem to be authoritatively settled.

The emulsion made, it is next necessary to clean some plates for coating. Probably the amateur will not care to buy new glass for the purpose, and will have by him sufficient spoiled negatives to satisfy his lantern-slide making requirements. These must be soaked in hydrochloric acid, (the strength is immaterial provided it is not too dilute and the soaking is sufficiently long), and then scrubbed to remove the film. When cleaned so far, they should be rubbed over with a little caustic potash or a ten per cent. solution of ammonia, rinsed, and dried. It is often recommended to use a substratum of some kind, such as albumen or a solution of indiarubber in benzol. I have never found this necessary if the clean glass when dry is dusted over with powdered talc, the talc well rubbed in, and then the glass wiped as clean as possible with a dry cloth. The cloth should not be a fluffy one. The film adheres well to a plate so prepared.

The plate should be coated precisely in the same manner as with wet collodion, but as this beautiful process, as far as many amateurs are concerned, at any rate, is obsolete, it will be best to describe it. A little practice will be required before a 3¼ by 3¼ plate can be coated without spilling a drop, either up the sleeve or on the floor, but it is not a difficult operation. The plate having been dusted should be held by one corner with the first finger and thumb of the left hand, or by means of a pneumatic holder in the same hand, then having cleaned the neck of the emulsion bottle from any dried specks of collodion which may have been left thereon, a pool of emulsion a little bigger than a five-shilling piece should be poured into the centre of the plate, which should then be inclined so that the rather viscid fluid flows into each corner successively, the superfluity being returned at the last corner into the bottle. Some return it into another bottle, the contents of which are filtered before use to avoid the presence of any dust which may have fallen upon the collodion while on the plate. It is highly desirable that the film left upon the glass shall be as clear and structureless as possible, and to ensure this it is necessary not to allow the emulsion to run twice over any portion, but to flow regularly from one part of the plate to another. When the whole of the plate is covered, the corner furthest from that from which the excess is going to be poured off should be slowly raised until the plate is almost vertical, and while the emulsion is dripping off into a bottle, the plate should be rocked to prevent, what is otherwise certain to occur, the film from forming into oblique lines in the direction of its flow. This description of the method of coating a plate will not be required by any who have successfully varnished a negative by pouring the varnish on and off, the two operations being very similar. The film upon the plate will soon be found to have *set*, *i.e.*, to have lost its fluidity and to be tacky. As soon as this is the case the plate may be stood up to dry spontaneously, or heat may be applied to it by placing it upon a hot glass or metal plate, or by any other means which does not involve its exposure to light. The drying should not take in any case more than a few minutes in a good current of air. The plate is then ready for exposure.

(*To be continued.*)

Holiday Resorts and Photographic Haunts.

THE WEST SUSSEX QUADRILATERAL.

By the Editor.

Midhurst, Cocking, Graffham, Duncton, and Petworth.

There has always been a feeling in my mind that if I could get away for a few days where nobody knew me, where no letters could get at me, and where somebody didn't talk photography or ask questions as to why his prints were yellow, or his toning bath wouldn't work, or why the image on the ground glass was upside down, I could be happy, provided, of course, I had my camera, and it didn't rain, and my tobacco pouch was full and a plentiful supply of matches. This was my ideal, and I have realised it. For three whole days we—for a brother journalist tried my Utopia with me—wandered about at our own sweet will, discarded stiff collars and other signs of civilised life, and smoked, and eschewed all photographic topics.

Still sticking to the Quadrilateral, we made Midhurst our centre. Midhurst is a straggly, sleepy little place, with a station a good half mile from the principal street. Why stations should be built so far from the towns is a conundrum I have often pondered over, and always given up. Midhurst, Petworth, Fittleworth, Arundel, Amberley, and a score of other places all have the station outside the town some distance away, and generally an ugly straight bit of road to reach it. One would almost imagine the idea was to frighten or depress the would-be visitor, and make him at once turn tail and kick his heels at the station till the next train came in, and get in that and go wherever it liked to take him, anywhere so long as it was away from that ugly bit of road.

However, we had made up our minds to stop at Midhurst, and we boldly plucked up our sinking hearts and swooped down on Midhurst and fell on the first inn—I beg pardon, it was an hotel—the "Spread Eagle," old-fashioned, clean, comfortable, and reasonable. After ordering lunch, we strolled round Midhurst, read a bit from the "A.P. Annual," called on Mr. Maides, of West Street, who has a dark-room, and asked the way to Cowdray House, the great show-place. After lunching, and securing bedrooms, we went into Cowdray Park, found the house, which belongs to the Earl of Egmont, and from whom or his steward permission has to be obtained to photograph it. I'm not going to say what we did, anyhow we saw the house, and certainly I have got one or two negatives of it. Cowdray House is an ivy-covered ruin, yet sufficient remains to allow one to picture what a splendid old place it must have been, especially the banquetting hall. Turning into the park we find one or two choice bits, and wander through some gates, and are told we are "trespussin, but oi don't moind, hit's the hearl has is pertikler." The wholesome fear of the "hearl" and a possible forty-shilling fine induces us to withdraw precipitately, and we wander out by another gate, past a dozen young urchins sitting on the fence who want to be "took," and one more impudent than the rest sings out, "I say guvnr, give us a bob, and you shall take me.' Certainly the board-school has done something, and we gratefully decline, and for a few moments ponder on the wonderful, elevating influence of free education in which manners are not included.

In Midhurst proper are some quaint old houses, one with the date 1760 on the front, but this, after looking at from several points of view, we reject. A half-timbered and gable-fronted house of 1760, with the ground floor full of fresh-killed mutton and beef, is not picturesque, and reluctantly we leave it (the beef and mutton, I mean). Further on, however, we find a corner house, which has



COCKING CHURCH.

only one disturbing point, and that is an enamelled iron sign, which reads, "Agent for So and So, Dyers." This we look longingly at, and carefully inspect to see whether it is hung up, but, alas! evidently the morals of the Midhurst youth are lax, and it is tightly screwed to the wall. We hold a council of war, and it is suggested that one of us should go and ask the people of the house if they have a screwdriver, and if we may take it down. I say that being the smaller and younger I ought not to go, but will stop and take care of the cameras. But, alas! the other one suggests that as he is the bigger he had better stop and take care of the cameras, in case a big yokel comes along, and finally we have to perpetuate the advertisement of the dye works. We have just focussed, when three more Board School scholars enter from the right, proceed to the middle of the picture and support the old house. Involuntarily we look at one another and simultaneously growl, "That'll never do." Then my big friend says, "Look here, you are bland and childlike, exercise your persuasive powers." Why small people should always be put upon to do nasty jobs I don't know, but taking a good glance at the focussing screen to see exactly what I have got in the field of view, I approach the three graceless louts and suggest their retiring to the opposite corner where there is a small stone. I make one sit down, another prop the wall up beside him, and the third stand a little in front, and tell them to talk to one another and not look at the camera. Immediately they claw off their caps, smooth their hair down, wipe their grimy faces on their sleeves, and assume an intensely stupid and set expression, and then I blandly say, "That's right, now just keep still a moment"—quickly we make our exposures whilst the three run off screeching to some others that they've had their "fotergraph took." Poor deluded youths, I had been so careful to pose them just outside the field of view, but then they will never know, and possibly they still imagine that their seraphic forms will be perpetuated in our prints. Leaving the town we enter Cowdray Park again, and make for the River Rother, where we hope to bag a bit or two. Here we meet with some of the Midhurst maidens, six of them, who immediately sit straight up on a bench on the river bank, and trust we shall get them in, but we again just exclude their lovely faces. Then one strikes an attitude and fondly imagines that because I tell her to stand still, and take the cap off, I am taking her. So I am, but on the mahogany, as I am careful not to draw the slide till she has giggled herself back amongst her companions out of sight behind a friendly bush.

Now we are pestered by some more boys who are coming from bathing, and the usual inane stale jokes of breaking the machine, etc., are let off; they gradually wear off, tired out because we light our pipes and potter about regardless of their would-be jocose and mannerless remarks.

But it is now getting late, and after giving our last plate two minutes' exposure on a rather dark corner, we make for the friendly shelter of the "Spread Eagle," where we do ample justice to some refreshments.

As a specimen of West Sussex manners and bucolic wit the following is almost too good to miss. I did not hear it, but it was told me by a native.

Scene, a village street, with three boys playing marbles. District visitor with red hair and a green hat passing. Small boy, looking up, says:

"Carrots allus has green tops — your shoot, Bill."

My room at the "Spread Eagle" is under the roof. This is as it should be, but it is on the top floor, and the roof slopes, and, afraid of the heat, I leave my window open all night to let some fresh air in, and there is a yelping dog which gives tongue incessantly; this is the last thing I hear before dropping off to sleep, I hear it again in the middle of the night as I just wake up almost stifled with the heat, and it is the first thing I hear in the morning when I wake up about six o'clock. How I wish that dog was mine! I would give it a short shrift and a long rope and a millstone for breakfast.

Punctually at 8.30 we descend to breakfast, and such a breakfast too, such eggs, real new-laid ones — not the London dairyman's new-laid eggs. And then the quince and apple jam! if ever you get the chance to eat quince preserve of any kind, don't miss it; quince has a flavour of its own indescribable, but worthy to be counted amongst the sweets that graced the tables of Olympus.

Turning out into the street, we make for the station, and even at the early hour of 9.30 the heat is intense, and we congratulate ourselves on the likelihood of being cooked before nightfall. Train to Cocking.

Take a look at the map on p. 113; you will see that Midhurst is the north-west corner station of the Quadrilateral, and on the road to Chichester is Cocking. We had bought a map of Sussex the previous night; and turning out of Cocking station we bear to the right and reach a bit of water, evidently a millpond. At one end is the church, and so charmingly situated that we at once unlimber and take it; but here, alas! there is a difficulty which, try as I would, I could not get over, and I intend to go to Cocking again on purpose to take another negative! I will try and describe the scene: a little bit of a stream, crossed by a crazy wooden plank with forget-me-nots, orchids, willow herbs, flags, and foxgloves

growing in profusion ; a path leading from the little bridge up to the church, which is beautifully framed in by trees; in the middle distance some apple trees laden with fruit, and in the foreground on the right, in the shallow weed-covered pond, a brood of fluffy yellow ducks are disporting themselves; above, a magnificent sky, with huge white floating clouds and a brilliant sun—an ideal picture only waiting to be taken, and my result a perfectly timed, well developed negative, but, alas ! right in the middle of the picture a poplar cuts the whole in two and spoils it !

Cocking—recorded in Domesday Book as Cochinges—is just at the foot of the downs, which are covered here with beech trees, from amongst which in certain times of the year a curious mist, in Cocking patois called "foxes-brewings," appears hanging over the tops of the trees, which has given rise to a local distich which runs as follows :

"When foxes-brewings go to Cocking,
Foxes-brewings come back dropping,"

which is generally true, as this appearance is most prevalent in damp, sou'-westerly winds.

May I remark here that my companion and brother journalist, a photographic journalist too, used a stereoscopic camera, and I could not help being struck with the enormous advantage that gave him. Little bits which were useless to me with my monocular eye and whole-plate camera, he immediately seized upon ; bits of trees which obtruded themselves far beyond their deserts into my pictures, he seized upon and utilised, and, without exaggeration, he could take three pictures to my one.

After taking the church, we held a council of war. The map showed us we should have to go round the church, and then go along a bit of road we could see just in front of us ; so shouldering our traps we trespassed and, skirting a field of barley, came out finally into the road, and saved our legs a bit of a walk. Following the road indicated on the map, we entered a real West Sussex lane. I have already spoken of the beauty of the lanes, and this was not far behind. High hedges made a pleasant shade, and the banks were as rich in wild flowers as the one previously mentioned. The wild clematis, honeysuckle, and wild rose, with its ragged robins, vied with the hawthorn, full of hips and haws, in making on every side a picture. Overhead, the same magnificent sky and sun ; underneath, the veriest slough of mud I ever walked through—inches, nay feet of it, linear square and cubic, for had we not carefully picked our way it would certainly have been over our feet ; and I had been extolling the beauty of Sussex lanes !

I had remarked on setting out that I particularly wanted two typical photographs, one of a real old double-thatched cottage, and another of a church with the real West Sussex dovecote tower ; hence we were both on the look-out, and at intervals the hills resounded with "A thatch, a thatch !" but, alas! too often were we doomed to disappointment. We got not one that day.

After a bit of more rough and muddy walking, we came to two cross-ways, and the question was which to take. The map again proved our friend, and we turned to the right and did a bit of real stiff collar work till we got on to the lower range of the Downs. In front of us the road was lost in grass ; the question was, were we right or had we come astray ? Again we lay down and consulted the map, filled our pipes, and carefully tried to trace out the road. No, the map showed the road to lead on to the Downs and there ended. We lay and pondered till we heard voices, and then saw three fair maidens coming down from somewhere. Again, I had to do the bland and child-like, and ask where we were, and where did the road lead to. "Please, sir, this is Cocking Down, and the road leads to Graff'm." "How far is it to Graff'm ?" "About three mile and a half." Again we consulted the map, and found Graffham ; this doubtless was what was meant. "Shall we keep to what looks like the road, or take short cuts across the fields ?" "Oh ! take the short cuts." Thus it was decided.

Now, those three maidens were young, innocent, and I am sure incapable of misleading us ; therefore, it must have been the short cuts. Across a lovely stretch of grass, and a fresh-ploughed field met us ; across this ploughed field, and we had a still more trying bit of collar work, a very stiff hill to climb, and at the top we were obliged to lie down, scotched, for a blow. Then, through some beech woods, sinking ankle deep in beech mast, down a hill, over a broken-down bit of hedge into a deep ditch, full of nettles. Oh, those short cuts ! Over more ploughed fields till we struck a path in a wood, and here in Indian file, fagged out, thirsty and speechless, we trudged up and down for an hour, the only remarks being "Where's the pouch ?" "Lend's the matches, your wretched baccy won't burn." Now this was hard ; he borrowed my baccy and then reviled it, but he stood six foot high, and I meekly put up with it ; I was too tired, too thirsty, too hot to argue. For two mortal hours we tramped, and then met my companion's brother, a sleek, dark, four-footed thing with long ears, which as soon as it saw us moved a little into the shade, and made me nearly drop my camera with its "He haw, he haw !" Mournfully we bade him good-bye and still continued to trudge on. We had done at least eight miles, and somebody said it was only three and a half. And then we came to a small, flat, open piece of heath, and, regardless of the fine polish of our cameras and the lacquer of brass, we dropped our burdens hastily, and fell tooth and nail on blackberries, ripe, rich, black, and juicy. For ten minutes we gathered and ate, and never a word spoke we, till, having exhausted the stock, we again took up our burdens and cheerfully and more briskly stepped out till the cry of "A thatch, a thatch !" again startled me. So often had I heard this only to be disappointed, that I involuntarily cried, "That(ch)'s a lie," but it wasn't—we had actually reached Graff'm. Graffham is one long street, a forge, a church, and an inn. Running down by the side of the street was a clear little stream, making a pleasant little chatter over small stony ways, till we were almost tempted to stoop and drink, but we came at last to an inn where we had nectar and ambrosial food, in the shape of shandygaff and bread and cheese. Imagine yourself, after a good ten miles walk carrying about 40 lbs., under a blazing hot sun the whole way, sitting down in a cool dim room with low ceiling, crossed by huge beams, eating bread and cheese, and quaffing huge draughts of ice cold nectar from old stone bottles and the virgin wood, not drawn from any nasty metal engines—certainly, we shall long look back on Graff'm with tender feeling, and wonder at the very small quarts that jug held.

After leaving Graffham we walk through a very fine park to Duncton, on the road stopping to get one or two shots at some reed-covered water, and then into Burton Park, where is a magnificent old oak tree, little else but the trunk now left, and this with an uprooted beech and an oak tree in full vigour give us the chance to secure a picture of prime, old age, and decay.

Soon after leaving this we are overtaken by a gentleman of the cloth who favours us with his company, and informs us he used to work the old wet-plate process twenty-five years ago, but this we imagine must be due to a lapse of memory, as he certainly does not look old enough to be of an age to work the process twenty-five years ago. Finally we leave the park and get into the turnpike road again, and encounter a slight shower of rain, and thus trudge on to Petworth station, when we find out that we have two hours and a half to wait for a train, and therefore decide to prospect in search of the picturesque.

A little way up the road we come to a mill, and here on both sides of the road we find material for four or five pictures, my last plate being exposed on some reeds, an old barge, and distant houses for five minutes. Then back to Petworth station and train to Midhurst, where we again find shelter under the wings of the "Spread Eagle" and do ample justice to the cold spread, for after about twenty miles on a broiling hot day with no more solid refreshment than blackberries and bread and cheese we were well able to clean plates, though not photographic dry plates.

PETWORTH.

Petworth, the worth or protected enclosure of one Peta. We have also within walking distance, Fittleworth and Lodsworth.

Domesday Record. — "Robert holds Peteorde of the Earl. Eddeva held it of King Edward on allodium. . . . Two Franks held two hides."

Comments.—Peteorde. Note the inability of the Frenchified Northman to pronounce the "th." Eddiva, a Saxon lady. Edward, Edward the Confessor. The Earl, the great Earl Roger, of whom we have previously spoken. Allodium, the earliest Saxon tenure before the days of Saxon serfs, a true freehold. Robert, see below.

A Short Family Sketch.—For fuller sketch see "Kelly's Directory." Robert, the son of the great Roger, forfeited his Manor of Petworth by rebellion against Henry I., who gave it to his second wife Adeliza. (See notes on Arundel.) Adeliza gave it to her brother. This brother married the daughter and sole heir of William de Percy, surnamed Alsgernon (the whiskered one), a knight who fought for William I. in the Battle of Hastings, and who became by this marriage the founder of the great Percy family, there for two hundred years "The Barons of Petworth. Henry de Percy in 1377 was created Earl of Northumberland.

Petworth Station.—A mile and a half from Petworth town. Why ? Guess. If you were a Petworth man, would you not endorse the Danish proverb, "There are three bad neighbours—a great river, a great road, and a great lord."

Leland, the chaplain of Henry VIII., writes : "The market town of Petteworth yn the wald of Southsax, ys right well encrased syn the Yerles of Northumberland used little to lye there." Would not the town of Petworth soon right well increase if the railway station were five minutes' walk from the town hall ? But do not for a moment imagine we wish Lord Leconsfield should "little lye here."

Compensation After All.—Ruskin says, "Picturesque beauty cannot exist in any district where coal is the propelling power." Would you have Petworth scenery spoiled, its old houses pulled down, its streets cease to be what an American traveller said of Chester, "a feast of crookedness" ? Do you not join in Ruskin's lament that our old streets and towns and cities are passing away like a dream ?

A Few Notes on Early English Domestic Buildings, having special reference to Petworth, Fittleworth, Midhurst, and the District around.—The earliest houses built of wood. When iron smelting made wood scarce, foundations and lower walls were built of local chalk or sandstone. Wooden sills were laid on these, and placed above were timber standards filled in with bricks or wattles covered with clay or loam mixed with chopped straw (post and pane work). See the Moor Farm-house. Note the timbers rougbly fashioned with the axe. The shrinking of the wood made a tile covering a necessity; tiles similarly used in these days bnt for ornament. The porch, a feature; sometimes supported two storeys. The end gables hipped or cut back, the long lean-to roof at the back of the cottages, the small gables in the front of the house form a special charm. See the town house of the Dawtreys near Petworth church. The chimneys, sometimes projections at the end of the house apart from the walls and lighted by one or two windows, sometimes rising in a mass in the centre of the building. The most common form of the fifteenth century, octangnlar clustered chimney shafts, did not appear till the end of this century. In the sixteenth century they were very common and highly ornamental. Specially note clustered chimneys at Cowdray and Moor Farm-house near Petworth.

Wherein Lies the Charm of the Old Builders?—Freedom from the hard and fast rules of an architect's plans and specifications? There was no distinction in early days between architect and builder; the builder's individuality found expression in his adaptations to site. Imagine a modern specification containing the clause that certain walls of a chapel must be as high as it "nedes reasonably to be."

Petworth House, open to visitors on Tuesdays and Thursdays; and to the Commissionaire and Kelly's Directory we must leave the tourist.

Five times has Royalty visited Petworth. Listen to the account given by King Edward VI. of his own visit:—"The nombre of bandes that went with me in the progresse made the traine great." Yes, when the "traine" was, he says, "thought to be nier 4,000 horse, wich were enough to eat up the country."

Can we wonder that a polite attempt was made to postpone a visit from Good Queen Bess by telling Sir Francis Walsingham that "the wayes by which she must come to them up the hill and down the hill so as she shall not be able to nse either coche or litter with ease," and "so full of louse stones as it is carefull and painfull riding for any body."

Another Royal Visit.—The allied Sovereigns visited England in 1814. The Emperor of Russia wishes "to see the style in which an English nobleman lives," and George, third Earl of Egremont, who did so much for Petworth, invited the monarchs and the princes. The picture in the library is the record.

Petworth Park.—What is a park? Not one in a thousand legally deserves the name. See Blackstone's essentials—(1) an enclosure; (2) vert, that is, trees, gorse, bracken; (3) venison; (4) royal license. Petworth claims these. A walk of twelve miles will verify No. 1; but be satisfied with the long tramp necessary to enter the park by its one gate.

When in the park walk on to the tower, climb to the top, and enjoy the magnificent view. Near it is the Raven's Clump; would that we had space to give you the exquisitely written and touching story of the Petworth ravens told by Mr. Knox in his "Ornithological Rambles."

When you leave the park gate continue your walk for another half mile to Tillington. Admire the trees in the Rectory garden and the view from Pitshill.

A word of encouragement for our technical work in villages. We are in the birthplace of the engraver Sherwin. Here is his story:—A young woodman enters a room at Pitshill where some of the family are drawing. Mr. Mitford notices his interest. "Can you do anything in this way?" "I should like to try." The portecrayon is handed him. The result secures for him a silver medal from the Society of Arts! He is afterwards appointed engraver to George III., and wins the gold medal of the Royal Academy.

Petworth Church.—Its restoration in 1827 has made it comparatively a modern building. The spire is some of the earliest work of Sir Charles Barry. The old church had a leaden spire. The chantry of St. Thomas is interesting. The monuments tell their own tale. Notice the deceptive painted mouldings on the walls and ceiling of the chantry. If you can obtain a peep at the register, ask for the statement made by the Rector, Dr. Cheynell, in the reign of Charles I., when his child was baptised. Surely no other register has so unique a confession of faith.

Search out some coffin-shaped slabs under the south wall of the church; on one is a portion of inscription in Lombardic characters. These were not used in England after the fifteenth century.

The Hospital founded by Charles, Duke of Somerset, in 1740, is a most excellent example of brick-work with mullioned windows surmounted by labels. Do you not admire the irregularity of the design?

Moor House, a short walking distance from Petworth, the ancient home of the Dawtreys (see notes on Hardham Priory). The mansion was built in the form of a quadrangle, but only a small portion remains. Obtain, if possible, permission to see the oak-panelled room, with its beautiful ceiling and grand fireplace. The exterior itself is worth a visit. The town house of the Dawtreys is near the church, taking up two sides of a sqnare. We have already referred to it. We must leave Petworth, but ere we do so we will have a word on '

Old Sussex Roads.—Here is a passage from the letter of a gentleman in the retinue of the King of Spain on his visit to Petworth in 1703:—"The last nine miles of the way cost us six hours to conquer them." Leland, of whom we have spoken, quotes the following:—"Essex full of good housewyfes, Middlesex full of stryves, Kentshire hoot as fyre, Sowseks full of dirt and myre;" and East Sussex as bad as the west, for Fuller tells ns of an ancient lady drawn to county church near Lewes by six oxen, the way being so stiff and deep that no horses could go in it.

ANOTHER ITINERARY.

Take the omnibus to Petworth Station, then walk on to Woolavington, Graffham, Selham, Cowdray Park, Easebourne, Midhurst. A good day's work, but not too great a fatigue for a tolerable walker if he takes it very easily.

Duncton.—Perhaps the newest Parish Church in our district, with the oldest bell. The only ancient foreign bell in the county, made at La Hague, and bearing the date 1369. A hypocaust (a furnace with flues for heating a Roman house) has been found here.

With Roman remains at Bignor, Wiston and Clayton, may we not conceive a Roman road running under the hills to Lewes, and on to the Portas Anderida, if such were placed at Seaford?

Woolavington.—Lavant, a source of water from the hills; *wull*, as wool, good pasture for sheep. A rarely disjointed scattered parish—Lavington, Barlavington, West Lavington.

West Lavington, too far out of our way now. Here Archdeacon Manning preached his last sermon in a Protestant Church. In the churchyard is the grave of the great Richard Cobden.

Woolavington. — The family seat of Bishop Wilberforce, once Bishop of Winchester. Bp. Wilberforce married the eldest daughter of the Rev. J. Sargent, at the time rector and lord of the manor The Park, an ancient one, once a *staurum* for cattle and sheep, and one of the ten parks belonging to Arundel. You will not hurry away. There is the glorious view, the pretty simple church, its mural tablets, the Bishop's crozier on the wall, the bishop's grave in the churchyard, marked by a simple cross, and on each side of which other simple crosses show the graves of his wife and eldest son. The house which stood here in Elizabeth's reign had towers at each angle.

Graffham.—Walk on to Graffham. You will not regret the walk We are sorely tempted to quote the description of the exceeding beauty of the view by Mr. Knox, but we must adhere to matter of fact, difficult though the self-denial be. There is a church mentioned in Domesday record, but the present is one restored in 1874. Notice the curious lock of thirteenth-century work on the vestry door. Domesday tells us respecting Graffham, that "four Franks (*i.e.*, foreigners) held the manor of the Earl (Roger). Six thanes held it in the time of Edward for their allodium. Then and now it vouched for ten hides." These thanes were doubtless thanes inferiores, simple freeholders; each of whom, reckoning a hide at sixty acres, held about 100 acres. No Small Holdings Bill necessary at Graffham in those days!

Corresponding somewhat with the Domesday Book were the "Nonae returns" of King Edward III., made in 1340, when Parliament granted him the ninth lamb, the ninth fleece, the ninth sheaf. The Nonae show that Graffham had its manufacture of pottery, and that apples were abundant and paid a tithe.

Are you noting these centres of early English home life?

Walk through fields and over breezy Graffham Common to—

Selham.—A convenient station. If you are tired you can take the train to Midhurst. But the walk through Cowdray to Easebourne will repay you. Close to the station is an inn. Here a request for an early cup of tea is met by a pleasant smile and ready response in that cleanest of clean parlours. Patronise the inn, and ask country innkeepers to follow the excellent example. Selham was evidently once a place of importance. *Sel*, a hall; *ham*, a home. Another Domesday Manor. Poor Selham had, in common with many other parishes in West Sussex, to bear its burdens for monks and nuns. Bishop Sherborne confirmed its church to the nuns of Rusper Priory, and the Priory of Calceto (see notes on Arundel) possessed one knight's fee, which may have been nearly the whole of the parish.

The church is worth a visit for its very small and narrow chancel arch, characteristic of Saxon or very early Norman work. This arch is unique in Sussex. Note also the squint, an opening between the chancel and south aisle, to allow persons sitting there to see the elevation of the host.

THE AMATEUR PHOTOGRAPHER.

IMPORTANT NOTICE.

In the issue of "The Amateur Photographer" for October 6th will appear the first instalment of a translation of Volume III. of Dr. EDER'S incomparable

"HANDBUCH DER PHOTOGRAPHIE,"

which forms a complete treatise on the use of Gelatino-bromide and Gelatino-chloride of Silver Emulsion.

This book has now run through four editions in German, and it is acknowledged to be the standard work on the subject, and this English translation places **the most complete and reliable Handbook** at the disposal of all interested in Photography.

It will be of enormous value to the Manufacturing, the Professional, and the Amateur Photographer. It explains fully the scientific and theoretical side which forms the necessary basis for successful practical work by enabling the operator to more readily grasp the why and the wherefore of every operation and the possible cause of failure.

For practical work it is unequalled, from the clear and precise directions it gives for every operation.

THE WORK IS DIVIDED INTO FOUR PARTS.

The first part treats of the theory, explaining the nature and composition of the haloid salts of silver, the action of gelatine, the different methods of making and ripening the emulsion, fog—its cause and cure, the action of foreign substances on the emulsion, the addition of iodide and chloride of silver; the action of light on the haloid salts, the principles of development, and testing the plates for gradation and sensitiveness; the action of the solar spectrum and the influence of dyes and other colouring matters on colour sensitiveness; this being the most exhaustive and complete treatise on Orthochromatic Photography yet written.

The second part is devoted to practical work and the various subjects, such as the dark-room, mixing, preparing, breaking up, washing and preserving the emulsion, coating the glass, drying, cutting and packing the plate; exposure, development, fixing, intensifying, reducing, and varnishing negatives; making orthochromatic emulsions; the preparation of films; the preparation and use of bromide paper, transparencies, reversed and enlarged negatives.

The third part treats of the use of gelatino-chloride of silver emulsions, for transparency work with development, and contains a complete treatise on gelatino-chloride printing-out paper.

The fourth part comprises an exhaustive treatise on failures, and with the supplement on the saving of residues, completes the work.

The author has not been content to give solely his own method of working, but has gathered from every authority and photographic journal the processes which have been recommended by experimentalists from the introduction of gelatine emulsions, so that the work forms a complete compendium of the advances made during the last twenty years.

The work has been brought thoroughly up to date, so that we have no hesitation in saying it will be found to be of incomparable value to all.

Reviews.

The "PHOTOGRAPHIC NEWS," November 15th, 1889, says—

". . . The book is profusely illustrated, and is emphatically *the* book on Photography with gelatine emulsions. It should find a place in every photographer's library, however small; and until we are in possession of an English translation, a German-reading photographer has a great advantage over those of his competitors to whom its pages are practically sealed. Any one engaged in photographic research will find this volume an indispensable companion, and certainly no one is justified in occupying a space in photographic journals with an account of experiments which he may believe to be new until he has at least ascertained whether similar experiments have been made before, and their result recorded by Dr. Eder in a volume which at present has no competitor."

"PHOTOGRAPHIC TIMES," December 13th, 1889—

"It is one of the most instructive and detailed handbooks on emulsion photography published.

"Dr. Eder's publications have earned a world-wide reputation, and although there are but few of them translated into foreign languages, they are extensively studied in America and England, at least by many amateurs and professionals conversant with German.

"We recommend the reading of this newest and most instructive contribution to photographic literature."

"BULLETIN BELGE DE PHOTOGRAPHIE," Vol. 6, 1889, page 854—

"It is unnecessary to recommend the perusal of a work by the learned director of the Imperial School of Photography at Vienna. Those who may read this volume will find in its pages the perfect method and the profound knowledge of the subject which we are accustomed to recognise in all the works of Dr. J. M. Eder."

Apparatus.

PERKEN, SON, AND RAYMENT'S NEW PHOTO-MICROGRAPHIC CAMERA.

Messrs. Perken, Son, and Rayment, of 99, Hatton Garden, have just constructed a new camera for photomicrography, which possesses several advantages.

The whole apparatus is made to work between brass guides, so that it is almost impossible not to get the lamp, condenser, microscope, and camera parallel. The bellows of the camera, which is constructed to take 3¼ square plates, have a stretch of 24 in., and coarse adjustment is obtained in the usual way with a rack and pinion, but a long steel rod with a deeply divided ring, actuated by a milled head, is provided underneath the camera so as to give fine focussing, with the microscope fine adjustment. The front of the camera slides up and down to allow of different height microscopes being used, or it may be entirely removed to allow of different fronts for different microscopes being used. The base-boards carrying the microscope, condenser, and lamp are all adjustable by rack and toothed wheels, so as to allow of adjustment either way.

The whole apparatus is well made and specially designed to meet the wants of photomicrography. Price £7 10s.

OBERNETTER-PERUTZ CELLULOID FILMS.

J. R. Gotz, of 19, Buckingham Street, Strand, has sent us a sample of the above, which have yielded very good results in our hands. The films are very sensitive and richly coated. Any developer may be used, but the following is specially recommended:—

A.

Pyro	4 drm.
Soda sulph	1 oz.
Distilled water	10 „

B.

Carb. soda (cryst.)	6 drm.
Distilled water	10 oz.

Equal parts of A and B may be taken; for development dilute from two or three times with water; for over-exposures two to three drops brom. potass, may be added, 10 per cent. strong. Ferrocyanide of potass. may also be used for giving density, only it must be borne in mind that it does not act as a restrainer.

Orthochromatic films may also be obtained of the same make, and the following are the prices of both: Ordinary, quarter-plate, 2s.; half-plate, 4s.; ortho., quarter-plate, 2s.; half-plate, 5s.

THE OBERNETTER-PERUTZ POSITIVE CELLULOID FILMS.

Mr. Gotz also sends us a sample of the above, which may be used either for copying in the camera or contact printing by day or gaslight. The special developer suggested is—

A.

Water	8 oz.
Yellow prussiate potass.	1 „
Sulphite of soda	3 dram.
Hydroquinone	1½ „

B.

Caustic potash	3 dram. in 1 oz.

C.

Bromide potass.	2½ dram. in 1 oz.

For development, take, say, 50 of A, 10 of B, and 5 to 10 of C. Add the same quantity of water, varying strength according to circumstances.

The application of these films is, of course, obvious, as they may be used for lantern or stereo slide work, window transparencies, etc. Prices, 3¼ sq., 1s. 9d.; quarter-plate, 2s.; half-plate, 4s. 4d.

Our Town Traveller.

THE EUROPEAN BLAIR COMPANY, LIMITED.

THE showroom and offices of the above company are situated at 9, Southampton Street, Holborn, and we called to see the hand-cameras they are making a speciality of, and most of which are new to the English market, though many of the Blair cameras and dark-slides have long been known in England.

The first camera we examine is the No. 3 Hawk-Eye, which has become very popular in America under the name of the

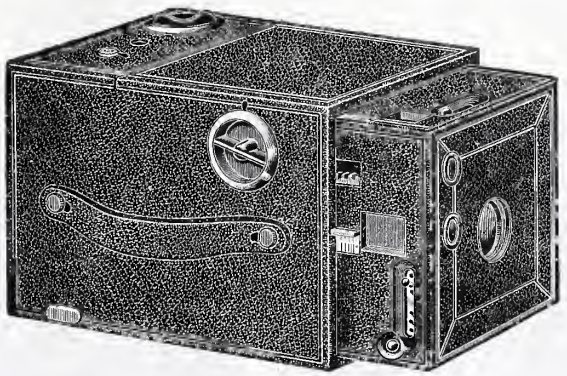


FIG. 1.—HAWK-EYE, TOP VIEW, OPENED FOR USE.

Columbus. This is designed for film work only, and will carry sufficient film for one hundred 5 by 4 negatives, though smaller rolls of film for twenty-five or thirty pictures may be obtained. The camera measures 5½ by 6¼ by 8 in., and weighs 3¾ lb., and is neatly covered with black leather, and has dark, oxidised metal fittings. It has a rapid rectilinear lens which is provided with three stops, a specially designed two-

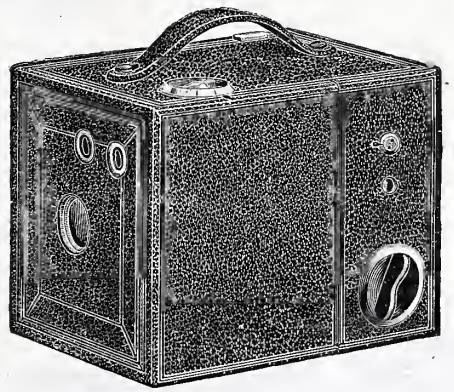


FIG. 2.—HAWK-EYE, SIDE VIEW, CLOSED.

way Hawk-Eye shutter, two finders, and focussing scale. A reference to the accompanying diagrams will enable us to understand the working parts more readily. Fig. 1 shows this camera with the front extended by means of the sunk screw seen above the handle. On the side will be seen the horizontal finder, the focussing index, and also the small knob which actuates the diaphragms. On the top will be seen the vertical finder with second focussing scale and also the shutter, which is fired by pressing the small knob at the end of the long slit, which is the means for setting the shutter; the small knob there shown is merely moved from one side to the other after exposure, and thus sets the shutter without uncovering the lens. There are three different speeds, besides time exposures, possible, and as the camera is provided with bushes, it may be used on a stand for time work if desired. At the

back of the camera, on the side, will be seen the film winder and the recorder. The price of this camera is £5 5s.

The Folding Hawk-Eye, constructed for 7 by 5 films, is a thoroughly useful, well-made camera, and capable of every class of work, and will find much favour, we are sure, amongst our readers. The camera is covered with leather, and is constructed to take either a roll-holder or plates. It has a double swing-back, a swing and a double sliding front, and has a specially constructed rapid rectilinear lens fitted with a Bausch and Lomb iris diaphragm shutter working between the combinations, which will give exposures from 3 seconds or longer to 1-100th of a second. The roll-holder or dark-slides are carried in the back of the camera, and the whole forms a very complete and compact set, the camera, extended for use, being shown in

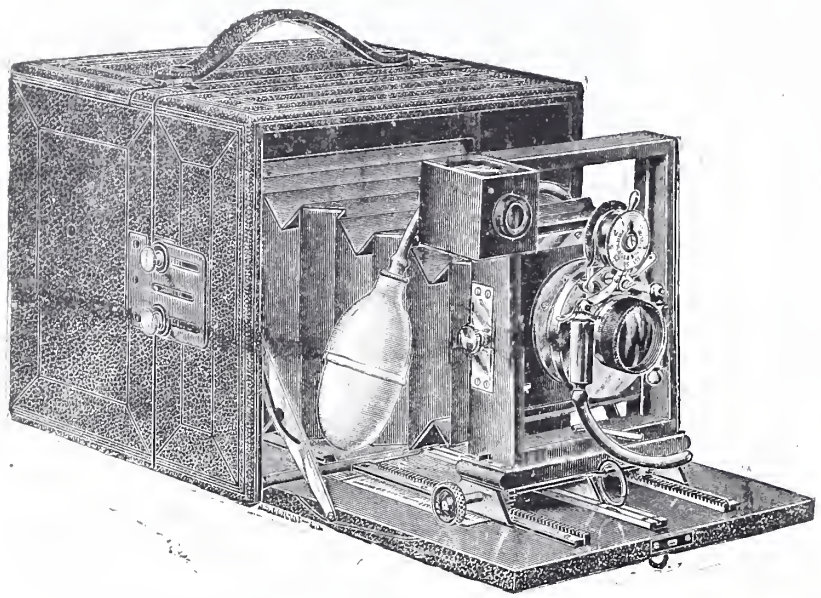


FIG. 3.—THE 5 BY 7 FOLDING HAWK-EYE, No. 2.

fig. 3, and the price is £12 12s.

A similar camera, without lens or shutter, is also constructed for those who desire to use their own lenses and shutters, price £6 6s. Both cameras have a ground-glass, and a small door at the back enables one to use it for focussing on a stand in the ordinary way. This type of camera is also

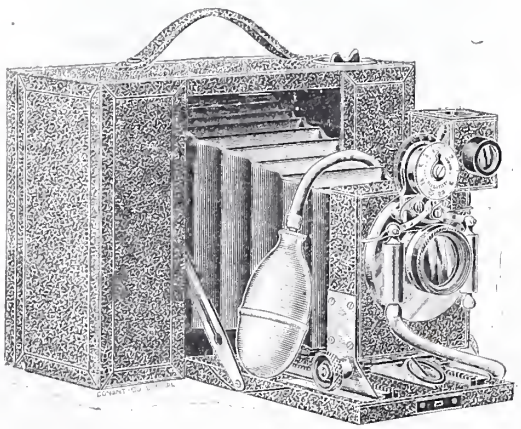


FIG. 4.—UNFOLDED FOR USE.

made in whole-plate size, and for lightness and compactness will not easily be beaten.

The next camera brought out for us to see is the Folding Kameret, shown in figs. 4 and 5, which is exceptionally small and neat, measuring when folded only $6\frac{1}{2}$ by $3\frac{1}{2}$ by $8\frac{1}{2}$ in., and weighs 4 lb. It is adapted to carry fifty 5 by 4 films, and is fitted with an 8 in. R.R. and the Bausch and Lomb shutter and a finder, and is covered in all exposed parts with morocco leather. For such a long range of focus this is one of the smallest and lightest hand cameras we have seen, and price is reasonable, £12 12s.

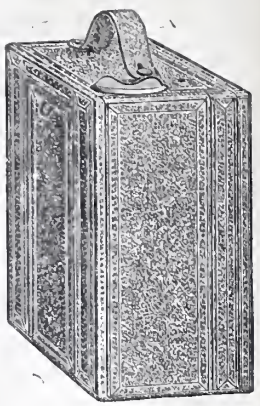


FIG. 5.
FOLDED FOR CARRYING.

For those who desire a simple and effective camera, we can recommend the Bull's Eye, which is absurdly cheap, well made, and from the results we saw, capable of very good work. It is neatly covered in leather, and measures $5\frac{3}{4}$ by $4\frac{3}{4}$ by $4\frac{1}{2}$ in. and weighs less than 2lb. It is fitted with a single achromatic lens, which covers sharply a picture $3\frac{1}{2}$ in. square. It has an ever-set shutter, a finder, and is constructed to take twelve pictures on a rollable film, and the films may be changed in daylight, being covered outside with black paper. The roll of film is inserted, and the key

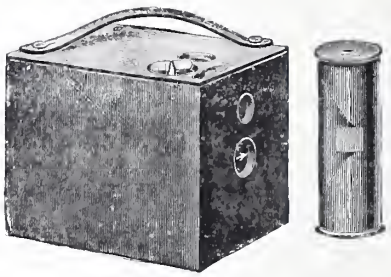


FIG. 5 and 6.

of the roll-holder turned till, on looking through a small, deep red glass hole at the back, the number 1 is seen. The price of this camera is only 36s., and for cyclists and lantern-slide workers it is especially suitable.

A visit to Southampton Street is well worth making, or a catalogue descriptive of all the cameras made by the European Blair Camera Company will be mailed on demand, and we can personally speak as to the good workmanship and the good work the cameras are capable of doing. We hope to be able to report next week on the Blair Film, as we have not yet had time to test the roll we carried away.

Societies' Notes.

LEEDS CAMERA CLUB.—A satisfactory inaugural meeting of the above club was held on Wednesday last, September 6th, in the Central Market Auction Rooms, 34, New Market Street, Leeds. After a resolution being made that a club be formed, the above title was adopted. It was agreed that for the present the subscription be 2s. 6d., with a further call of 1s. per member, if required. A committee of five members was formed to draw up a code of rules, to be submitted at the next general meeting, to be held at the same address on September 14th, at eight o'clock. It is urgent that all intending members will be present at this meeting, as the business is important, viz., the election of officers for the year and the adoption of rules.

THE following are the conditions and prizes of the Stanley Photographic Competitions to be held at the Royal Agricultural Hall, London, N., from November 17th to November 25th, inclusive. Twenty medals (five gold) are offered for competition under the rules and conditions given below, in the following classes:—A. Champion (for pictures that have already received awards in any open competition), gold, silver, and bronze. B. Landscape (with or without figures), gold, silver, and bronze. C. Lantern slides (set of six), gold, silver, and bronze. D. Portraiture (figures, studies, and genre), gold, silver, and bronze. E. Hand-camera work (set of four, negatives not to exceed 5 by 4 inches), gold, silver, and bronze. F. Beginners (who have commenced photography since January 1st, 1890), silver and bronze. G. Cycling (set of four, taken by apparatus carried on a cycle), silver and bronze. In Classes A, B, D, and F the award will be for one print only. H. Special society prize. For the best collective exhibit by a photographic society, a handsome optical lantern, value £7 7s., will be awarded. There must be at least six members represented, and the total number of frames must not exceed twenty-five, nor be less than twelve. Only framed pictures are admissible. A silver medal is also offered for the best individual picture in this competition. Address all communications respecting photographic section to Walter D. Welford, Manager Photo Section, Stanley Show office, 57 and 58, Chancery Lane, London, W.C. *Rules and Regulations.*—The competitions will be governed by the following special rules and regulations, in which the rules adopted by the conference of judges are embodied (where not expressly quoted will be held to apply), and by the general regulations of the Stanley Show as far as they apply:—(1) Judges' decision: The decision of the judges as to merit, and upon all other questions the decision of the committee, shall be final. (2) Withholding medals: The awards are placed in the hands of the judges and they have full power to withhold any of them. (3) Previously medalled pictures: Exhibits which have previously taken awards at open exhibitions or competitions are only eligible to compete in Class A. (4) Open competition: All the competitions are absolutely open to amateur and professional alike. (5) Productions from one negative: No production of any kind whatever from the same negative can receive more than one award. This does not, however, apply to pictures in the special society competition. (6) One award in each class: No competitor may receive more than one award in the same class. (7) Refusing exhibits: The committee reserve the right to refuse and return any picture and without stating the cause. (8) Infringement of rules: The committee reserve the right to hang pictures (marking them "not for competition") infringing any rule or regulation, or entered in the wrong classes, and the fees will not in such case be returned. (9) Mounts and frames: All photographs must be mounted and framed, but Oxford and oval-shaped frames are not admissible. In Classes A, B, D and F, each print must be framed separately. (10) Entrance forms: The entry form must be properly filled up and signed by the exhibitor, and be accompanied by a remittance for the entry fees. (11) Delivery of exhibits: All exhibits must arrive at the Agricultural Hall, Islington, London, N. (Barford Street entrance) on the 11th November, addressed to the "Manager of the Photographic Section, Stanley Show." Each package or case must bear on the outside the name and address of sender. (12) Packing: The exhibits will be unpacked, repacked, and delivered to carriers for return at the close of the exhibition. By engaging expert assistance the Exhibition Committee will take every precaution, but they will not hold themselves responsible for any accident, loss, or damage that may occur. (13) Removal of exhibits: No exhibit will be allowed to be removed until the close of the exhibition. (14) Particulars for catalogue: All particulars of the exhibits must be sent upon the entrance form, also upon the back of the frames. Labels for this purpose will be sent by the manager of the photo section upon application. No particulars will be permitted upon the front of the frame, mount, or picture, other than the title. (15) Not for competition: Pictures will be received (and hung as far as space permits) marked "not for competition," free of entry fee. (16) Carriage of exhibits: The cost of carriage to and from the exhibition must be defrayed by the exhibitor. (17) Appeal: Any protest against an award for incorrect or fraudulent entry, or for any other cause (except as to merit), must be made in writing, and lodged with the manager of the photo section during the exhibition, accompanied by a fee of 5s., which will be returned, unless the objection be deemed frivolous. (18) Entrance fees: A remittance of one shilling per frame irrespective of size (lantern slides one shilling per set) must accompany the entry form. The entrance fee for the Special Society Competition will be the reduced one of sixpence per frame. (19) One class only: No individual picture can compete in more than one class, but subject to Rule 5 duplicate pictures may be sent. (20) Entries must be received not later than October 31st. NOTICES.—Diplomas: A handsome and artistically designed diploma of merit, signed by the judges, will be given with each medal awarded, and similar diplomas will be, at the discretion of the judges, awarded to meritorious pictures not receiving a medal or prize. Presentation of prizes: The lantern slides sent in for competition will be exhibited at a musical and photographic conversazione, which will be held shortly after the show. All the competitors in the photographic section will be invited, and a limited number of invitations for competitors' friends will also be issued. The presentation of the prizes and diplomas will be made at this conversazione, and due announcement of the date and place will be made in the photographic and cycling press.

THE following are the awards at the Royal Cornwall Polytechnic Exhibition:—In the professional class first silver medals have been awarded to Ralph Herbert Lord for his striking picture "You Stupid Boy;" Robert Frost, for "Iris," direct natural size; W. J. Byrne (two), for "A Budget of Newspapers," and "Richmond Horse Show;" E. D. Lavender, for portrait; F. W. Edwards, interior of King Henry VII. Chapel. E. Scammell receives first bronze for interior of St. Mary's Church; as also does John H. Coath for "Tobogaining;" John H. Gear being highly commended for "Study of Cattle." The awards to amateurs were:—Second, silver medals, Henry Tonkin, Banqueting Hall, St. Michael's Mount; and A. G. Tagliaferro, "A Humble Offering;" first bronze medals to Caleb Court Cole, "On the Thames, near Iffley"; Charles R. Taunton, hand-camera studies; Edwin Dookree, "Black Prince's Tomb," Canterbury Abbey; and A. W. Gotlieb, "Study of Fruit." Arthur R. Dresser, for "Cattle in Stream" and "Dog Breeders," was highly commended.

WE regret to have to record the death of Mr. W. E. Brampton, the auditor of the Tunbridge Wells Photographic Society, on the 19th ult. He was a very active member of the society, and a holder of an AMATEUR PHOTOGRAPHER silver medal, and he will, we are sure, be much missed and regretted by all who knew him.

MOST probably the judges for the Hackney Exhibition will be Messrs. F. P. Cembrano, jun., W. E. Debenham, and Colonel Gale. September 30th is the latest date for receiving entries.

THE Hexham Photographic Society will hold a members' competition for work done during 1893. Entries close on November 1st, there being three classes.

Societies' Meetings.

Aston.—The first lantern evening of the session was held on 7th inst., and was in every way a success. Mr. W. Tylar, just returned from Chicago, was voted to the chair, and the business of the meeting commenced. Slides were exhibited by Messrs. Tylar, Pridden, Casson, Twigg, Pilditch, Fidoe, and some by Dr. Hill Norris on the new dry collodion slides were generally admired for their clearness and detail. Discussion on the merits and demerits of the plates then took place, and a vote of thanks to the chairman, who promised the society that they should be the first to hear a lecture on his American trip, closed an exceedingly well-attended and enjoyable evening.

Brixton and Clapham (Camera Club).—The last meeting was held on the 5th inst., at 8 p.m., the chair being taken by Dr. J. Reynolds, F.R.G.S., President. A member of the committee of instruction was present for the purpose of affording assistance to members requiring it. At the conclusion of the formal business Mr. W. H. Harrison read a paper on "Some Useful Photographic Standards." Mr. Spurge, who was present as a visitor, then gave a very full description of the theory and practical use of his sensitometer and standard light for use in connection therewith. Next meeting, September 19th, Mr. F. W. Levett, "Carbon Printing."

Hackney.—On 5th inst. Mr. Beckett presided. The Hon. Sec. presented the Society with Cassell's Academy Books. Some of Mr. Powell's plate-backing was distributed, Messrs. Beckett and Smith promising to give report on same. The negative shown last meeting by Mr. Barnes was explained to have been caused by light, the plate being not to blame. A question was asked by Mr. Roberts how to remedy a film which had been put wrong way in developer. The Chairman said if this had been discovered soon, by turning right way, and giving prolonged development, it might have been cured. In answer to question as to how many gelatino-chloride prints could be toned at once, the Hon. Sec. advised just enough to cover about 2in., ½ plate. Mr. T. H. Smith thought 6 or 8 in. whole-plate dish. A question on weights and measures was then debated on. The chairman said doubt was in many minds at present, so they preferred to say "parts," as avoidupois and apothecaries' weights

seemed to be a rock on which opinions were divided. Mr. Puttock asked what is best amount of developer to use for ½ plate. Hon. Sec. said he would use at least 3oz., it was a great mistake to be economical. Mr. Gosling showed some stereoscopic work done with his home-made contrivance. Mr. Barnes showed some Isle of Wight views. Mr. Puttock showed a much over-exposed plate. Mr. S. Beckett advised intensifying. Mr. Avent showed a print executed by the Automatic Printing Machine Company, on rapid bromide paper. Prints were automatically exposed and cut off at rate of sixty per minute. The print shown of Captain Abney was very fair.

Leeds.—On 7th inst., Mr. J. H. Walker in the chair, Major Darwin's paper on "Lens Testing at Kew," kindly lent by the P.S.G.B., was read by Mr. Washington Teasdale, F.R.A.S., one of the respected founders of this society, who made many useful remarks and explanations, rendering the technicalities simpler and more interesting and instructive. An interesting discussion followed, in which the following gentlemen took part:—Messrs. J. H. Walker, A. A. Pearson, S. A. Warburton, G. H. Rodwell, and others. A number of very fine slides were afterwards thrown on the screen, contributed by Messrs. Washington, Teasdale, Godfrey Bingley, and J. H. Walker.

South London.—On 4th inst. ordinary meeting, Mr. Mark Boxall in the chair. By the courtesy of Mr. Powell samples of his caramel and sienna anti-halation backing were distributed among the members for trial. Mr. L. E. Morgan then gave a demonstration of the working of the new developers, amidol, metol, and glycin. The latter, he said, did not, by reason of the slowness of its action, lend itself to demonstration. It was strongly recommended for reproductions of photomicrography. Negatives of varying exposures were passed round to show its capabilities in that respect. Amidol, he stated, he was partial to on account of its simplicity. He used a single solution, the formula of which was given by the manufacturers, and proceeded to develop some negatives, bromide paper and lantern slides with it. Some plates were also developed with metol. At the next meeting, on the 18th inst., Mr. J. E. Farmer will give a demonstration of the making of lantern slides.

Tunbridge Wells.—The ordinary meeting was held on the 7th inst., Mr. E. R. Ashton in the chair. After the usual business, the death of Mr. W. E. Brampton, the auditor, was feelingly alluded to, he having been associated with the society since its formation, and a vote of condolence to his widowed mother was unanimously passed. At the funeral, which was largely attended, the Hon. Secretary and several members were present, a handsome wreath having been sent from the members, as a mark of the respect and esteem in which he was held by them, for his geniality and his earnest desire to further the interests of the association.

To Correspondents.

All communications for these columns are to be addressed to The Editor "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES UNANSWERED.

Aug. 25.—Nos. 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.

ANSWERS.

6116. **Blue Prussiate Paper.** — The sensitising solution for this paper is:

Ammonio-citrate of iron	120 gr.
Distilled water	1 oz.
Ferridcyanide of potash	120 gr.
Distilled water	1 oz.

Dissolve the salts separately, and then mix and filter the solutions. Keep in the dark, and apply to the paper with a buckle or blanchard brush, dry in the dark, expose, and then wash in water.—EDITOR.

6116. **Blue Prussiate Paper.**—Blue prussiate paper may be made in the following way:—Dissolve 300 gr. of potassium ferricyanide in 2½ oz. of water, also 300 gr. ammonio citrate of iron in the same quantity of water; mix the two solutions and keep in the dark. Coat ordinary drawing paper with this, using a very soft brush or a piece of cotton-wool. Keep the paper for a few days, and print under a vigorous negative until the shadows are bronzed, then wash in several changes of water, till the last washing water comes away quite clear, when the print will be ready for drying and mounting.—W. PITCAIRN CRAIG.

6118. **Stain.**—It is always a doubtful job to try and remove the silver stain from a negative. A weak solution of cyanide of potassium, about 5 gr. to the oz. is about the best thing, though.—EDITOR.

6128. **Toning Bath.**—I have found the same trouble as "Bulbrook," in having a deposit from the sulphocyanide toning bath; it gives the sides of the bottle a dirty red appearance and the gold is often thrown down as a black precipitate, rendering the bath useless. To prevent this, distilled or boiled water should be used in mixing the solution and strict cleanliness observed. The easiest way to cleanse this deposit from the bottle is to shake up in it finely chopped raw potato or broken egg shell. The toning bath when not in use, should be kept in the dark. W. PITCAIRN CRAIG.

6128. **Toning Bath.**—The red deposit is probably metallic gold. The best way to use the sulphocyanide bath is to well wash the prints absolutely free from silver, and after toning, filter the bath and keep in the dark.—EDITOR.

6131. **Bleaching Chloride Prints.**—So far as we can find out, it has never been mentioned before that ammonia added to the fixing bath will reduce them.—EDITOR.

6135. **Platinotype.**—The only way of giving platinotypes a glazed surface would be to enamel them with collodion, or else to soak the print in rather a strong solution of gelatine to which a little chrome alum has been added, and then hang up to dry, or preferably squeegee down to a waxed glass, and allow to dry and then strip.—EDITOR.

6142. **Developer.**—The cause of the solution turning brown is exactly the same as with pyro, namely, oxidation. Increase of the sodium sulphite or acidulation of the solution with sulphurous acid would tend to keep it longer.—EDITOR.

6146. **Toning Bath.**—About 10 gr. of chalk is sufficient for 10 oz. of acetate bath. This should not be filtered out, but left always in the bottle.—EDITOR.

5147. **Focal Length of Lens.**—You have made a mistake, somewhere. 2½ in. is an absurd focus for a half-plate lens. Take a foot rule and focus till you get it reduced on the ground glass of your camera to 3 in., then measure the distance between the ground-glass and the object, multiply this by the number which represents the reduction in the above case 4, then divide the result by 4+1, when the quotient will be the focal length.—EDITOR.

6150. **Toning and Fixing Bath.**—The following has been suggested, but it is not satisfactory in use; in fact, albumenised paper does not work satisfactorily with any combined bath:—

Chloride of gold	6 gr.
Tungstate of soda	60 „
Ammonium sulphocyanide	100 „
Hyposulphite of soda	960 „
Distilled water	10 oz.

—EDITOR

6152. **Developer.** — Amidol will give the most satisfactory results. Try the following:—

Amidol	5 gr.
Sodium sulphite	45 „
Distilled water	1 oz.

—EDITOR.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT..

A CONSTANT READER.—Your letter has shared the fate of all anonymous contributions, that is to say, it has been torn up and put in the waste paper basket.

CROWN.—(1) We should think some impurity in the washing water caused the spots. Try washing first in a solution of salt and water. (2) The solution is very satisfactory, and if only a moderate enlargement is required we should advise you to use it.

IGNORANT.—Mezzotype paper is a rough drawing paper which prints out like ordinary silver paper. It is treated just the same as any other printing out paper. the only difference being that all the toning and fixing baths have to be half the usual strength. You cannot compare it to bromide or chloride, for the simple reason it gives totally different results.

PUZZLED.—We must give this up. The only possible explanation is that at one point the long hand reflected a bright light from some point when you commenced the exposure, and not during the exposure, and that the image of the same when moving was so under-exposed as not to develop.

G. H. H.—(1) The instrument is to be altered so as to include a greater angle; now it only includes about as much as a four-inch on a half-plate. We have never found any trouble with too much light being transmitted. (2) The only one we have used is C on your list, and this is perfectly reliable. Always glad to help you as far as we can

BROXHOLME.—(1) B would have been the only one worth entering, and this well printed on matt chloride paper might have got into class I. (2) A spoilt by the uninteresting bit of white sky. B could be improved by more careful printing, and masking out the little bit of tree on the left. C spoilt by halation. (3) The speed is never greater than 1-20th of a second. (4) No, the developer should be used once only. (5) Use the isochromatic plates. Write again, and let us see some more work.

A. H. BLAKEY. — Mount the prints dry. Our "Monday afternoons" have recommenced, but we shall not have "Monday evening" receptions.

IRISHMAN.—Yes, the film can be stripped from gelatino-chloride paper, but it requires a little extra care and attention.

R. H. P.—One of the easiest and simplest papers to use is gelatino-chloride paper, either Ilford P.O.P. or Eastman's Solio, and if you purchased a packet of either you would find full directions enclosed.

J. L. HEATH.—Thanks for cutting, but we had article in type which appears this week.

GAINSBORO' MOUNT.—You have merely made use of a very old method of producing reversed and duplicate negatives which is easily explained. If you give a short exposure you will get a positive, but increase the exposure and you get complete reversal or solarisation, and thus get a negative from a negative or positive from a positive.

XERXES.—The papers must be coated with gelatine as follows:—

Heinrich's gelatine	320 gr.
Distilled water	20 oz.

Soak for four hours, dissolve by aid of heat.

Chrome alum	12 gr.
Distilled water	4 oz.

Dissolve and add to the gelatine. Coat the paper; any sort will do for this.

H. J. SIBTHORPE.—An under-developed and fixed negative can be intensified by any known process, and provided all the detail is there, a good negative will result, but if there is not detail, no known process will bring it out.

A. GALLAWAY.—We will see what we can do for you and write you.

W. C. T.—The most practical method is to mount a print on the card with fresh-made starch paste, cut the mount and print in half, allow one half to dry quickly, and keep the other moist by laying wet blotting paper over it. Any signs of fading will soon show. If you want to test it chemically, cut a bit up rather small, boil in water, and test for hyposulphite with permanganate, or boil with hydrochloric acid and see whether sulphuretted hydrogen be given off.

C. F. B.—The fault is probably in your negative. Cannot you send us up the negative of the house, and we will see what we can do for you, and will then answer your questions. D wants 2 in. cutting off the right, 1⅛ in. off the bottom, and 2 in. off the left, then you have by no means a bad little thing. You are printing in far too strong a light, and there is a slight tendency to staining.

H. B. CONSTABLE.—Thanks; we note for slides and suggestion, which we will try and adopt.

AMATEUR asks how to obtain a negative with the face pure black and the clothes nearly clear glass. We would suggest first of all using a plate of very low rapidity, and such as the Hill-Norris collodion plate, give such a plate a very short exposure—under-expose considerably, in fact—then develop with a developer rich in pyro, about 16 gr., bromide 8 gr. to the oz., and add the kalai, which for preference should be potash, very slowly. Probably this would be successful.

J. W. S.—(10) Negative too weak, we should think, for thin printing process. (11) Would have been better without the sheet, and the tone is hideous. (12) Far too black and white, as longer exposure and weaker developer would have improved matters. (13) Not bad, by any means, but there is too much work on the print. (14) Fogged all over, and vignetted too closely (15) Spoilt, of course, by the movement. (16) A hideous tone, and fogged all over. (17) Slightly under-developed.

A. TURNER.—Many thanks for solution, which works well in our hands. Is it not Lin. saponis co.?

The AMATEUR PHOTOGRAPHER

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Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 468. Vol. XVIII.] FRIDAY, SEPTEMBER 22, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

Our Views.—A Chance for Some Profit—Thiosinamine—Price of Thiosinamine—Testing It—The P.S.G.B.'s Failure to Secure Rooms—Architectural Exhibition—Ocean Greyhounds and Photography—Pall Mall and the Salon—The P.S.G.B. Congress—An Explanation—The Central Photographic Club.

Flotsam and Jetsam, by Anchorite.

Letters.—Thiosinamine (Robinson, Conrad)—Travelling Photographers (L. B.)—Hackney Exhibition (Fenton-Jones).

Articles—Photographic Procedure (Wall)—Lantern-slide Making (Bayley)—Pictorial Photography (Wall)—The Central Photographic Club—The Camera and the Pulpit (Patten)—Film in Relation to Photography (Milburn)—Humours of Photography (Machus).

Holiday Resorts.—West Sussex—Ilfracombe.

Apparatus.—Tyrer's Postal Tube; Blair's Films—Wheeler's Mancunium Mounts—Adams' Changing Box.

Editorial Department—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

Terms of Subscription—

United Kingdom.....	Six Months,	5s. 6d.		Twelve Months,	10s. 10d.		
Postal Union	„	„	6s. 6d.		„	„	13s. 0d.
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Trade Advertisements *are received up to Tuesday morning.*

Publishing Department.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

The Annual Lantern-Slide Competition closes September 30th.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

The prize prints of the Photography at Home Competition were sent to a gentleman in Scotland for exhibition, and in returning them he states that "had I had the privilege of selling the photographs, I could have got rid of the lot at good prices." We have no doubt the successful competitors will be glad to hear this.

We publish this week two interesting letters on the use of Thiosinamine as a fixing agent. It is to be regretted that Mr. Robinson did not publish details of his experiments, as now, according to the usual etiquette, Liesegang's name will be associated with it as the discoverer. The negative which Mr. Robinson sends us is certainly not calculated to make us wish to use Thiosinamine for valuable negatives. There is considerable loss both of density and detail, and the colour of the deposit is pale yellowish-brown, very much like that of a negative which has faded after mercurial intensification.

We obtained some Thiosinamine, and had to pay four shillings an ounce for it. It is in pale salmony-pink crystals, which we have found some little difficulty in dissolving in water, as they have a great tendency to float on the top and stick to the sides of the vessel. When using it, the whole office simply reeked of essential oil of mustard, which has led us to imagine that the sample was not as pure as it might be.

The sample was handed to our contributor, Mr. E. C. Conrad, F.C.S., who happened to call, asking him to kindly test and report. We ourselves made up a 1 per cent. solution, and placed in it a piece of celluloid film, which had not been developed, to test its action. The emulsion was in the first place a deep yellow or slightly greenish-yellow colour, but after a few minutes' immersion it turned much paler, then pinkish, and finally quite white. Fixation took just over two hours to complete, whilst a similar size piece of film placed in an old hypo bath, which has been in use for a fortnight, fixed in ten minutes. Comparing the two films when fixed, that treated with Thiosinamine was not so clear as that fixed in hypo, whilst the gelatine on the former had frilled to such an extent as to make it absolutely useless had it been a negative.

The P.S.G.B has for some time been on the look-out for a more suitable habitat, and it was hoped that some very suitable rooms might have been obtained at 30, Bloomsbury Square. Now we regret to hear that the negotiations have fallen through, and the old address still holds good until further notice.

A VERY interesting exhibition of photographs is on view, free, at the Royal Architectural Museum, Tufton Street, Westminster. It is composed of over one hundred views and details of buildings taken entirely by Mr. John L. Robinson on the excursions of the Architectural Association this summer in the eastern counties, when they made Diss their head-quarters. Many of the views, particularly some sunset effects over the Broads, are charming artistically; but the most striking feature of the whole exhibition is the valuable aid photography may, in capable hands, lend to the architectural student.



"WHO'S TAKEN MY MILK?" *G. A. Carruthers.*

"Photography at Home" Competition. SECOND BRONZE MEDAL.

AT the present time, when haste to make money quickly seems to be the prevailing idea in most men's minds, we have certain developments as a result which most of us are glad to welcome for one reason and another. For one thing, we have the eternal race for speed on our northern running lines and also between ships across the Atlantic till they have earned for themselves the name of "ocean greyhounds." Now it is reported a novel idea has been carried out in shipbuilding, which has enabled the screw propellers to be so placed that they are always in unbroken water.

THE *English Mechanic*, commenting on this fact, makes a suggestion which is decidedly interesting, for it says, "Possibly the papers by M. Marey describing his chrono-photographic experiments on locomotion in animals to the Paris Academy of Sciences may suggest modifications to the ingenious inventor, and the vessels of the future may dart through the water as the pike does when he seizes his prey."

WHETHER Pall Mall and the Salon are to be helpful or antagonistic to one another or not, it cannot be denied that considerable interest will attach to the opening of the parent society's exhibition, to see whether it has suffered in quality. That it has not suffered in quantity is an open secret, the number of pictures sent in being much heavier even than last year. We believe as a matter of fact that only one out of every three pictures can possibly be hung, unless, as sarcastically suggested by one frivolous youth, they pave the floor with the common or garden stuff.

THE programme of the Congress of the P. S. G. B. and affiliated societies, which is arranged to take place on the 10th, 11th, and 12th of October, promises well; it is as follows:—

Tuesday, 10th October, at 8 p.m., at the Gallery, 5A, Pall Mall East. The presentation of the medals awarded at the Exhibition. The President's Annual Address. A paper "On the Action of Light on Bacteria and Fungi," by Professor H. Marshall Ward, M.A., F.R.S.

Wednesday, 11th October, at 3 p.m., at the Theatre of the Society of Arts, John Street, Adelphi, the following papers will be read—"The Present Position of Photo-Micrography," by Andrew Pringle, F.R.M.S.; "On a Process of Photo-Mechanical Printing in Natural Colours," by W. Weissenberger (of St. Petersburg); a paper by Mr. Emil von Hoegh (of Berlin); "Photography in Compartments," by Hector Maclean, F.G.S. At 8 p.m., at the Theatre of the Society of Arts, John Street, Adelphi, the following papers will be read—"On Exposures and Chemical Action," by Captain W. de W. Abney, C.B., F.R.S.; "The Recent Solar Eclipse," by Captain Hills, R.E.; a paper by Dr. A. Miethe.

Thursday, 12th October, at 3 p.m., at the Theatre of the Society of Arts, John Street, Adelphi, a demonstration of collotype printing will be given by Messrs. T. Bolas and W. E. Debenham. The following papers will be read—"The Measure and Numeration of the Stops of Photographic Lenses," by Dr. P. Rudolph; a paper by Mr. Arthur W. Clayden, M.A. At 8 p.m., at the Gallery, 5A, Pall Mall East, a special lantern display.

WE hear also that it is expected that by the kindness of M. L. Lumiere, some of M. Lippmann's latest specimens of photography in colours will be on view at one of the meetings.

FURTHER, it is necessary that for the lantern display admission shall be by ticket only, and a limited number of tickets will be sent to every member of the society for themselves and their friends. Members of affiliated societies should apply to their respective Secretaries for these tickets, or for any further information.

WE have received numerous inquiries from correspondents as to the meaning of the words, "nor a slide from any negative, a print from which has previously taken a prize can be entered in this competition." Our reading of this is that no slide can be made from a negative, a print from which has taken a medal at any AMATEUR PHOTOGRAPHER Competition, but this does not debar slides being made from negatives, prints from which have taken prizes at open competitions.

IT will be seen from the report in another column that the Central Photographic Club is at last on its legs, and judging from the Committee elected, it ought to be a success. The advantage of having the meetings at an hotel is obvious, as the members may obtain refreshments of all kinds without much trouble at any hour of the day, and we believe it will soon be made the rendezvous for many a pleasant unofficial meeting.

IT also will be noted that the first 300 members will be elected without entrance fee, so that those of our readers desirous of joining should send in their names at once to the Hon. Secretaries. The first meeting will be on Friday, October 6th, when the A. P. Prize Lantern-slides will be shown

Letters to the Editor.

THIOSINAMINE AS A FIXING AGENT.

Sir,—In your issue of September 15th you speak of Thiosinamine as a *new* fixing agent, and in the sense that it is only just brought to the puhlic notice in that character no douht the word is correct, but I do not admit that it is newly discovered, as I used it experimentally, to fix prints, about eighteen months ago.

There can be no doubt about its reducing action on silver salts. My difficulty has been to stop its action. Perhaps Mr. Liesegang will he able to assure us, hefore long, that prolonged washing will have the effect of removing this chemical from the paper or gelatine film. Meanwhile, I would very strongly advise photographers not to experiment with it on valuable plates.

I enclose for your inspection an old negative, the upper part of which was fixed in hypo applied with a brush, washed in the usual manner, and the lower part then fixed with Thiosinamine, applied in the same manner and washed.

Do you think, judging by the appearance of this plate, that it is a safe thing to use?—Yours, etc., Chas. T. Robinson,

Manager, the Carlotype Company.

Rainham, Essex, 15th Sept., 1893.

Sir,—This salt, as stated in your issue of the 15th September, is the ammonia salt of oil of mustard. This sells at present for 4s. an ounce; but as oil of mustard can be made artificially, that is, prepared from other material than mustard seed, it would be much reduced in price if even a small demand should arise. In order to test this as a fixing agent, I have carefully compared it with hyposulphite of soda and obtained the following results. This is not so soluble as hypo, but by using warm water a clear solution can be obtained without difficulty. I used one of a strength of 10 per cent.

Freshly precipitated chloride of silver is dissolved in about the same time as it would he by a corresponding solution of hyposulphite of soda, but a chloride of silver plate is not thoroughly cleared for some time, and a bromide of silver plate very slowly. For the sake of comparison, I give the average time of three experiments—

Plates.	*Hyposulphite of Soda.*	*Thiosinamine.*
Chloride of silver	5 minutes	7 minutes.
Bromide of silver	8 ,,	17 ,,

With Aristotype paper and Eastman's chloride paper Thio is much more satisfactory, fixing them as fast as hyposulphite and being a much more stable salt. In conclusion, I would remind buyers that Thiosinamine is, when pure, a colourless, crystalline salt, without smell; some on the market has a yellow colour and a most disagreeable odour.—Yours, etc., E. C. Conrad, F.C.S.

TRAVELLING PHOTOGRAPHERS.

Sir,—The people of Wroot, near Doncaster, will look askance at travelling photographers in future. A number of the villagers posed themselves with infinite care, and produced their most bewitching smiles before a camera the other day, in the belief that they were being photographed. The operator—a gentleman named Szarskowski—levelled his lens from under the usual black cloth, and when his victims had worked their countenances into their happiest expressions—some producing only a broad grin and some an angelic smile—removed for an instant the cap from his apparatus, and enquired with business-like promptness, "How many copies?" The only defect in the arrangements was that the camera was without the necessary slides and plates; in fact, Szarskowski could have taken photographs just as well with an empty soap box. A number of the villagers paid for copies of their photographs in advance, and are still awaiting delivery. Szarskowski is in gaol awaiting his trial for obtaining money under false pretences. He says he took the negatives, but sent them away to be developed, but he will have to convince a jury of the correctness of that statement. He could not even remember the address of the person to whom he sent the negatives, and it is thought that he is not likely to do. I enclose a photograph of him taken whilst he was busy focussing.

L. B.

[Our correspondent sends us a very good print of the above incident.—Editor.]

THE HACKNEY EXHIBITION.

Sir,—Will you please allow me to correct a wrong impression which appears to have been caused about Class F in our forms for the forthcoming exhibition. It would appear as if in one class—the one mentioned—we do not take amateurs' entrances. This is, however, erroneous; the wording is perhaps a little ambiguous. We *do* accept their entry, the wording in the first place being to indicate to the professionals that firms would be accepted, not as in other rules having to be the work of one man only.—Yours truly,

W. Fenton-Jones (Hon. Sec.)

Photographic Procedure.

By E. J. Wall,

Author of "The Dictionary of Photography."

(*Concluded from page* 158.)

Section XI.

REDUCTION.

When by continuing development too long our negatives are so dense that they take an inordinate time to print we have recourse to reduction. Frequently it happens that we find on removal of the negative from the fixing bath that it looks very dense, but I do not advise any one to undertake reduction at this point. It is far better to thoroughly wash the negative, dry it and take a print from it, and then see whether it be worth while reducing. If it is, all that we need do is to soak the negative in water till the film be thoroughly softened, and then apply one of the reducers.

Howard Farmer's Reducer.—Probably this is the best known of all. It is easy to make and certain in its action, though personally I far prefer Belitzski's. To prepare Farmer's reducer a 10 per cent. solution of potassium ferricyanide, or red prussiate of potash, should be made, and enough of the ordinary but fresh fixing solution poured over the well-wetted negative. A few drops of the ferricyanide solution should now be put into a measure, from 20 to 60 drops to the ounce, according to the degree of reduction required, the hypo solution poured into it, and the mixture returned to the plate, and the solution allowed to act till nearly the required degree of reduction is attained. The solution should then be poured off and the negative well washed with water.

If only a little ferricyanide is added, the reduction takes place gradually and evenly, but if plenty, about 60 drops to the ounce, be added, the shadows are attacked more than the high lights, and greater contrasts are obtained.

Belitzski's Reducer.—This solution is made as follows:—

Potassium ferric oxalate	15 parts.
Sodium sulphite	15 ,,
Oxalic acid	5 ,,
Hypcsulphite of soda	75 ,,
Distilled water	300 ,,

Dissolve the potassium oxalate and sulphite in the water, and add the oxalic acid till on shaking the blood-red solution turns a brilliant green; pour off from any undissolved oxalic acid, and add the hypo, shake till dissolved, and bottle. The advantages of this reducer are that it may be kept for some months, that there is no precipitate, and that it is suitable for negatives developed with any developer. The colour of the solution gives one a good idea as to the strength of the solution, as by constant use it turns yellow and orange. Personally I have found this the most satisfactory reducer for local reduction. It is used either immediately after fixing, or else as directed for Farmer's solution.

Other Reducers.—Cyanide of potassium has been recommended, but certainly is not safe; its action is so violent that it is difficult to prevent the whole image being eaten away. Certain chlorides, like ferric and cupric, have been suggested, but with all these a subsequent fixing bath has to be used. The best of these is undoubtedly that suggested by Spiller:—

(1) Alum	120 parts.
Copper sulphate	120 ,,
Salt	240 ,,
Water	1,200 ,,

(2) Saturated solution of common salt.

For use, mix in equal parts and apply to the negative. In using this no after-fixing is required, the salt acting as a solvent of the silver chloride formed.

Haddon's Reducer.—Haddon has suggested as an improvement on Farmer's reducer the use of sulphocyanide of ammonium and ferridcyanide, which acts in the same way, but more evenly and slowly, and the negatives do not require so much after washing.

Reducing Intensified Negatives.—Sometimes it may happen that we have intensified a negative a little too much, and wish to reduce it, then frequently plain solution of hypo will reduce it according to the method of intensification followed, or should this not be strong enough, then cyanide of potassium may be used

It was my intention to have carried these articles on through the whole process of negative and print making, but as we commence at the beginning of next month the translation of Eder's "Handbook to Emulsion Photography," where the subjects are so fully treated, these articles will not be further continued.

Flotsam and Jetsam.

HE was a quiet country parson, and when the inoffensive amateur politely asked for permission to use his camera on the church it was readily granted; indeed, the reverend gentleman took quite an interest in the man. Perhaps he dabbled in photography himself. Let us hope so. He asked the amateur what he would take, and the answer must have a line all to itself.

"A LITTLE Irish cold, please!"

THAT was the story an evening paper contained the other day, and there it stopped short, just like the weekly instalment of a thrilling serial. It would be so interesting to know what happened next.

TALKING of parsons reminds us that one of them has pressed photography into his service as a pulpit illustration, and in a very striking way too. He preached on "Instantaneous Photographs," and drew from it a very forcible and effective lesson, which needs no apology for its reproduction here.

"WE walk through this world and life, or stand and gaze, with no more thought of this befalling us than we had that day;. . . . and then in a moment the delicate silvered glass is made ready for us in some human spirit, the light flashes on it, the slide goes home, and there we stand. There we stand with the leer in our eyes, or the look in them God's angels love to see; and, with the ban or benediction on our lips, the very essence of what we are is caught and hidden away, and the work is done."

THE camera is becoming quite a terror to wrong-doers, and, of course, it must have its share in the new mystery of this Ardlamont shooting business. The Procurator-Fiscal—what a terrible name to call a man it is!—has had a number of pictures taken of the spot in the plantation where the ill-fated Lieut. Hambrough lost his life.

FIRST, the place itself was taken, then a constable was put on the exact spot where the deceased was found after the shot had been fired, and the marks of the shot on the trees were indicated by bits of paper and cloth. These plates are afterwards to be enlarged to test the distribution of the shot and compare them with the results of experimental tests elsewhere. The missing man, Scott, was not "taken," unfortunately.

DOUBTLESS the evidence thus afforded will be of considerable assistance, but great care will have to be exercised in using it. The camera cannot lie, but neither can it be held answerable for all the deductions that may be made from it. If it helps the cause of justice, well and good; but it may find more profitable employment than as an agent of the police, or the Procurator-Fiscal, or any such body.

AND it is by no means elevated by the use which a contemporary says it is to be put to by a grocer in South London. It is a penalty which it has to pay for its extraordinary popularity that it should be subject to all these uses—one might almost say abuses—against which we feel inclined to do a bit of grumbling.

THIS special grocer—inventive soul that he is—threatens to give away "your photographic portrait with a pound of our two-shilling tea." We say, threatens. For there is a condition, and it is that he can construct an efficient arrangement of flashlight and ferrotype dry-plate semi-automatic camera. He thinks it will not be necessary to keep a customer more than four minutes.

ONE is tempted to say, "We know that man. He comes from America"—and to advise him to return there at the earliest possible moment. It is a choice blend—two-shilling tea and photography.

WANTED, a photographable beauty! That is the announcement which recently appeared in a leading luminary of the journalistic world. Mary Anderson and Mrs. Langtry have had their day, and the shop windows are open for a new sensation. What offers, ladies?

ANCHORITE.

SOCIETIES' FIXTURES.

Sept. 21—NORTHAMPTONSHIRE.—Excursion to Brampton and Althorp.
" 21—ASTON.—"Lantern Slide Making, Practical," Mr. S. Delicate.
" 21—TOOTING CAMERA CLUB.—"Stereoscopic Photograph by, Mr. Dollery.
" 21—NEWCASTLE-ON-TYNE.—Out-door Meeting, Bardon Mill and Staward.
" 21—LIVERPOOL CAMERA CLUB.—Outing to Hoylake.
" 21—HEXHAM.—Out-door Meeting, Bardon Hill and Stawood.
" 23—WEST KENT.—Excursion to Farningham and Shoreham.
" 23—BRISTOL CAMERA SOCIETY.—Excursion to Shirehampton,
" 23—SOUTH LONDON.—Excursion to Chislehurst and Paul's Cray.
" 23—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOCIATION.—Excursion to Welwyn.
" 23—LEYTONSTONE.—Excursion along the River Roding, second section, from the Red House Bridge, Barking side.
" 25—N. MIDDLESEX.—A Paper by Mr. Thomas Bedding.
" 26.—P.S.G.B.—Technical Meeting at the Gallery, 5A, Pall Mall East. Explanation of the Apparatus in the Exhibition, by the Exhibitors.
" 26—HACKNEY.—"Bromide Enlarging," R. Beckett.
" 27—PHOTOGRAPHIC CLUB.—"Enlarging."
" 27—LIVERPOOL.—"Collodion Transparencies, Preparation, Coating, and Developing," Mr. W. A. Brown.
" 28—LIVERPOOL.—Lantern Lecture, "A Holiday in Normandy," by Mr. Joseph Earp.
" 30—HUDDERSFIELD.—"Remarks on the Huddersfield Hora," by T. W. Woodhead.
" 30—BRISTOL CAMERA.—Excursion to Brislington.
" 30—WEST LONDON.—Excursion to Brentford.
" 30—NORTHERN PHOTOGRAPHIC AND SCIENTIFIC ASSOC.—Excursion to Hyde Park.
" 30—LINCOLN CAMERA CLUB.—Excursion to Stowe and Coates.
" 30—LEYTONSTONE CAMERA CLUB.—Excursion to Swardstone and the Valley of the Lea.

Lantern-Slide Making.

By R. Child Bayley.

II.

Plates coated with collodion emulsion are far more liable to mechanical injury than gelatine plates; a very slight scratch suffices to remove the film and spoil the plate, consequently the greatest care must be taken in printing on them by contact with a negative, that no particles of dust or dirt intervene between the two surfaces, and that in putting one plate down on another no sliding motion is given—the lantern plate should be placed directly into the position which it is intended to occupy, and held there. To effect this readily, there are two or three forms of lantern-slide printing-frames in the market; the principle in each is the same. A stout mask 3¼ by 3¼ is adjusted over the negative to the exact position the lantern plate is intended to occupy, and clamped there. Into the aperture of this mask the plate is put and held in position during exposure by a board and spring provided for the purpose. The springs usually supplied with the ordinary printing-frames will be found too strong, and the sliding method by which they are fastened renders it very difficult to avoid injuring the delicate collodion film.

As regards the exposure of collodion emulsion plates, of course variation will be found to exist between the speeds of different batches of emulsion, and the best method possible is to expose a trial plate or trial plates to act as a guide for subsequent exposures. With what I myself should call an *average* negative (this is a very vague term, and the personal factor enters very largely into such calculations), an exposure of thirty seconds a foot from an ordinary gas-flame is about correct, but while almost any sufficient exposure within reasonable limits will give a good slide as regards density and clearness, the tone is dependent upon the time of exposure and method of development. In this respect collodion emulsion will be found to resemble gelatine lantern plates, a short exposure and strong developer having a tendency to make the tone cold and black, a full exposure and deliberate development giving warm tones. The developer described below will be found with the correct exposure to give very fine warm brown tones, equal, if not surpassing, in beauty any obtainable with gelatine.

After exposure the plate should be flooded with alcohol for a moment. For this method the old methylated spirit is very suitable, but methylated spirit as at present sold is perfectly useless; so that unless the former is accessible, recourse must be had to the purer spirit; the expense of this latter is but trifling, since it can be used for this purpose over and over again, being poured off the plate back into the bottle again. The alcohol having been poured off, the plate must be rinsed under the tap or in a dish of water until the greasy appearance of its surface caused by the alcohol has vanished, when it may be flooded with a developer of the following composition per ounce :—

Pyro	4 gr.
Potassium bromide	3 „
Ammonia	2 „
Sodium sulphite	16 „

Or—

Pyro	4 gr.
Potassinm bromide	3 „
Potassinm sub-carbonate	15 „
Sodium sulphite...	16 „

If the exposure has been anywhere near the correct one, the image will make its appearance in from ten to thirty seconds, and will steadily gain in density. When development is complete the plate is placed in the hypo to fix, an operation which is generally complete in half a minute or less, after which it is rinsed for a few minutes and dried. Drying can be effected in the ordinary way, or if time is an object the plate may be heated so that it shall be completely dry in a minute or two, there being of course no danger that the film will dissolve, as would be the case with gelatine.

Both development and fixing are done more readily by holding the plate by one corner with the first finger and thumb of the left hand, or by attaching a pneumatic holder to the back, rather than in a dish, as with gelatine. The progress of the operation can be watched very much more easily in this way as well as effecting economy in the developer. Potassium cyanide can be used for fixing purposes, but possesses no very marked advantages over hypo, while its poisonous properties render it a by no means desirable adjunct to the other chemicals in the dark-room. The only occasions upon which cyanide becomes useful are those when it is intended to follow up fixing by toning; it is then convenient, since it is more easily washed out of the film than hypo; but with the majority of amateurs the tones obtained directly by means of development will probably be preferred to those which result from following up this process with a toning bath. In case, however, it should be thought desirable to tone, the slide, after fixing and thorough washing, may be placed in a bath consisting of a solution of one grain of platinum bichloride in three ounces of water, to which has been added one minim of nitric acid, until the wished-for colour is reached, after which it may be washed and dried.

LANTERN SLIDES WITH GELATINO-CHLORIDE PLATES.

For some reason, to me at least unknown, gelatino-chloride plates seem to have quite dropped out of notice. Yielding results as nearly approaching those obtainable with collodion as any gelatine process is capable of, and placing in the hands of the photographer the means of obtaining almost any conceivable tone from bright red to coal black by means of modifications in the development alone, it is hard to imagine why it should have been so completely superseded by the lantern plates now in the market, although the latter possess certain advantages over it. To the amateur who is desirous of making an emulsion, the gelatino-chloride process offers great inducements. The various manipulations being identical with those for gelatino-bromide, it forms an excellent opportunity for an exercise or preliminary canter before going in for emulsions of greater speed, the manufacture of which has to be surrounded with many and special precautions.

To set about making about four ounces of the finished gelatino-chloride emulsion, sixty grains of common salt should be dissolved in two ounces of water. This solution should be placed in a beaker or cup, and to it should be added 120 grains of Heinrich's gelatine. Before adding the gelatine it should be cut up into shreds, well but quickly rinsed in two or three changes of water, time not being given for it to absorb much of the water, and squeezed as thoroughly as possible. The gelatine should be allowed to swell in the saline solution for about half an hour, and the vessel in which it is should then be stood in water at a temperature of about 120 deg. Fahr. for another half hour, by which time it should be perfectly fluid.

In the meanwhile 120 grains of silver nitrate are to be dissolved in two ounces of water, and warmed to about the same temperature as the gelatine solution. This latter, when quite melted, must be transferred to a bottle of a capacity of not less than ten ounces, and should then have the silver nitrate solution added to it a few drops at a time, with constant shaking between each addition. When all the silver nitrate is added, the bottle, containing what is now a milky-looking emulsion of silver chloride, must be thoroughly well shaken. The above operations have to be performed in a yellow light; one thickness of orange glass is quite sufficient, unless the sun is shining directly upon it. Care should be taken that the temperature is not higher than 120, as in such case there is a danger of the emulsion being granular and coarse; if this precaution be taken, and the proportions above given are employed, the resulting emulsion will possess a beautifully fine grain, and be in every way suited for lantern slides by contact, but will be too slow for reduction work in the camera.

As soon as the silver has been added, and the bottle well shaken, its contents may be poured out into a flat dish to set. If ice is at hand the dish may be placed in a bigger one in which are a few lumps to hasten this operation; if ice be not at hand it will be found to be a fairly stiff jelly at the end of some six or eight hours. When the emulsion has reached this condition it may be cut up with a strip of glass or squeezed through a piece of clean canvas under water, so that it is divided up into small shreds to facilitate washing. The shredded emulsion should be covered with water, which must be frequently changed for two or three hours, at the end of which time it can be gathered up into a muslin bag and drained until as much water as possible has been taken from it. The water is extracted with much more ease if an ounce of alcohol is poured into the mass after it has drained for a few minutes. The emulsion must then be re-melted, filtered, and the plates coated, as previously described for gelatino-bromide emulsion. (See Amateur Photographer, vol. xvii., p. 318.)

The exposure required by plates made in this manner will be found to be from twice to four times that for the collodio-bromide emulsion, previously described. It can, however, with great advantage, when very warm tones are required, be considerably prolonged. For the same purpose the addition of a few drops per ounce of developer of a 10 per cent. solution of common salt will be found of use. A large number of developers, yielding different tones, can be employed. The three best are due to Mr. A. Cowan, and are made up as follows :—

Ferrous sulphate	140 gr.
Sulphuric acid...	1 drop.
Water	1 oz.

One ounce of the above is added to three ounces of one of the three following, according to the tone desired :—

FOR COLD TONES.

Potassium citrate	136 gr.
Potassium oxalate	44 „
Hot water	1 oz.

FOR WARM TONES.

Citric acid	120 gr.
Ammonium carbonate	88 „
Cold water	1 oz.

FOR VERY WARM TONES.

Citric acid	180 gr.
Ammonium carbonate	60 „
Cold water	1 oz.

The ammonium carbonate employed in the two latter solutions should smell strongly of ammonia and should be freshly prepared. If it is kept for any length of time it will be found to spoil. Of these developers, the first mentioned will be found to have the speediest action and the last to be the slowest.

After development, fixing, and thorough washing as for ordinary plates, a slight veil may be found over the negative due to impurities in the water employed for development. This can be got rid of by rubbing the film gently with a tuft of cotton wool wetted with *very* dilute sulphuric acid, and well washing afterwards.

Chloride plates prepared in the manner described will keep very well for a few weeks if kept in a cool dry place, but after the lapse of a certain time, the length of which depends upon the circumstances of their packing, they will be found to spoil and become useless pretty rapidly. Only small quantities of emulsion should be made at once therefore, and the coated plates should be dusted carefully, laid face to face with nothing between them, and wrapped up tightly. Tinfoil is said to be an excellent wrapping to prevent their too rapid deterioration.

(*To be continued.*)

Pictorial Photography; its Principles and Practice.

BY A. H. WALL.

CHAPTER V.—UPON PHOTOGRAPHING SKY EFFECTS.

GLANCING briefly back before proceeding to a new branch of our subject, let us note the ground already covered.

The first chapter was dedicated to various reasons why photography should be studied as other fine arts are, and not as an exclusively mechanical occupation.

Chapter II. dealt with pictorial composition, explaining its principles and purposes, and the consequent importance of its careful, thoughtful study.

Chapter III. took up the subject of lines in a picture, and showed the leading parts they play as elements of composition, and the necessities they respond to in various ways, all more or less pictorially important.

In the fourth Chapter we dealt with intermediate tones of light and shade, and dwelt upon their "values" as accurately expressing forms, as conveying ideas and sentiments, as representing truly the varied effects of air and light, and, quite apart from all these things, their sensual or visual influences, from which they are at once separated and united just as the notes of a song's music are from the words to which it has been harmoniously wedded. It touched largely upon the genuine pleasure and delight to be derived from the combined studies of art and nature. The man or woman who loves the one is sure to love also the other.

Now one of the greatest sources of delight in studying nature lovingly, we get from the sky. And this is intimately associated with the study of tones in light and shade. As John Ruskin eloquently says, the sky "is that part of creation in which nature has done more for the sake of pleasing man, more for the sole and evident purpose of talking to him and teaching him, than in any other of her works....There is not," he adds, "a moment of any day in our lives when nature is not producing scene after scene, picture after picture, glory after glory, and working still upon such exquisite and constant principles of the most perfect beauty in that glorious dome, for the good and delight of all the dwellers on earth. It is the realm of beauty, beauty raised to the loftiest in order that all may see. Sometimes gentle, sometimes capricious, sometimes awful, never the same for two moments together, almost human in its passions, almost spiritual in its tenderness, almost divine in its infinitude. It is surely meant as the chief teacher of what is immortal in us, as it is the chief minister of chastisement or of blessing to what is mortal." In another of his precious pages how forcibly he touches upon the same ideas, describing how certain great masters of landscape painted air and light; how David Cox gave us dew-laden air and "soft white clouds melting with their own motion;" how Copley Fielding, "casting his whole soul into space," mingled "light and vapour" in his pictures, "always with a passion for nature's freedom burning in his heart;" how J. D. Harding revelled in revealing "nature's own sunshine," following it "into the crannies of the rocks" and along the flanks of the sloping hills;" and how Clarkson Stanfield, "concealing nothing and falsifying nothing," modelled "the masses of the sky with the strength of tempest in their every fold;" and how Turner painted "with the elements waiting upon his will, and the night and morning obedient to his call." Then, again, when describing Turner's grand picture of Venice, how he dwells upon the way in which the painter reveals a "white flashing fulness of dazzling light which the waves drink and the clouds breathe, bending and burning in intensity of joy." In this glorious work he says of the sky, "It is visible infinity, liquid, measureless, unfathomable, panting and melting through the chasms in the long fields of snow-white, flaked, slow-moving vapours that guide the eyes along their multitudinous waves down to the islanded rest of the Euganean hills." Comparing this dream of Venice glorified by sunshine and air to the wonderfully photographic-like picture which Canaletti painted of the same subject, he says of the latter, it is Venice as she was seen "by the most unfeeling and untaught of mankind. The bargeman and bricklayer probably see no more in Venice than Canaletti gives. What more there is in Venice than brick and stone—what there is of mystery and death and memory and beauty, what there is to be learned or lamented, to be loved or wept over, we look for to Canaletti in vain." Of Stanfield's Venetian painting he complains in a like spirit, despite its acknowledged merits. Beautiful as it is, it lacks poetical associations, feeling, and sentiment. And yet how vastly superior to the best photograph of Venice I have come across (the best, by the bye, I saw in Naples) is Stanfield's splendid picture, in which the sky was all but vacant space, and nothing suggested more than it actually represented as a literal fact, a kind of empty box fact, something with nothing in it. Again quoting Ruskin (what higher authority can one quote?), "We destroy both space and size either by the vacancy which affords us no measure of space or by the distinctness which gives us a false one."

All these brief bits of extract show how important is the study of air and light, otherwise sky, to the landscape artist who would, by any means, make a genuine picture. Ah! yes, some may say, but in all these remarks and in all his suggestions, Ruskin has colour in view, and that is altogether beyond the photographer's reach. This is true, but whoso makes such an objection overlooks a fact which at once meets it. If the photograph does not give colour it suggests it. Every colour has its tones, and the critic of works in black and white knows this so well that he uses and has always used, and rightly used, the word "colour" to indicase combinations of tones. He says of one monochrome picture it is "full of *colour*," and of another "there is no *colour* in it," meaning that the tones do or do not convey to our mind's eye the colours of nature. So here you see, as in every other

element of a picture, we must remember the suggestive as well as the pictorial or imitative purpose of your work. Take an engraving of Turner's Venice, and you will recognise in it the air and sunlight of which Ruskin speaks so enthusiastically. Shut out the sky and you will see them filling "the blue sea between us with the fulness of its wings," troubling "the shadows of those azure, fathomless depths of crystal mystery, on which the swiftness of the poised gondola floats double" by "the quivering of its bright reflections." In the engraving, if a good one, as in the painting, "dream-like and dim, but glorious, unnumbered palaces lift their shafts out of the hollow sea—pale ranks of motionless flame—their mighty towers sent up to heaven like tongues of more eager fire, their grey domes looming out vast and dark like eclipsed worlds, their sculptured arabesques and purple marbles fading further and fainter, league beyond league, lost in the *light* of distance." I have italicised the word "light," for objects do die away and fade in a full noontide blaze of vaporous sunlight, as often as they do into the misty gloom of sunset, whatever certain photographs may and do say to the contrary. Tones may range from pensive and solemn to light and cheerful, through long passages of pearly gradations, subtle in delicacy and tenderness, and through combinations of strong, rich full dark gradations, but they always suggest colours under certain conditions of light and air. Some are allied to light in its utmost brilliancy and intensity, stealing out of and into it almost imperceptibly. Others take short, swift, rapid strides into or out of sunshine, into or out of profound gloom. And sometimes a single landscape combines both these conditions in picturesque and striking contrast, but they are always controlled by cloud and sky, by light and air. A dark cloud scudding across a summer sky will give us such effects on distant hill sides, or ranges of woody mountains, or along a wide expanse of lake or shoreless ocean, and very beautiful they are. Gay, sad, solemn, or picturesque, brilliantly forcible or modestly subordinate, these tones are all alike governed by the dominating influences of ever-changing atmosphere, and should, therefore, faithfully indicate it.

I have in my eye, just now, the windows of two photographers. In one I see the most mechanically photographic of photographs. They have no natural graduation of tones, no real separations of distance, nothing to suggest atmosphere or the assimilating or dominating character of the light by which they were "taken"—no beauty, no thought, no feeling. Distinctness of detail and uniformity of general effect without another idea pervades them all and each in every part. The focusser evidently strove to secure an equality of "sharpness" as the loftiest aim of his art. The developer strove to intensify his high lights and preserve his shadows transparent, to destroy depth, space, perspective, and get surface only—not to realise the tones he saw in nature. Ignoring the most delicate as well as the strongest tones with all their subtle intermediates, he too palpably had his own idea of exposing and developing, and afterwards of over and under printing, ideas which had not the slightest connection with the representation of atmosphere or light. As to the spaces where skies should have been, there was nothing in any of them but flat, meaningless patches of grey and white, or bare, blank spaces of pure white or pale, uniformly grey paper.

In the other photographer's windows most of the pictures are from the same objects, but how different! Life and light, space and motion are seen in them. The skies are real skies, changes wrought by atmosphere are faithfully indicated, everything is not equally strong in detail, the gradations are not almost everywhere alike. It seems to me that here is the work of one who saw his subject at various times and under differing conditions, studied it before he chose it, and then exposed his plate with a clear conception of what he wanted. He probably took two negatives in rapid succession, one of the winding river, church, and trees, with distant hills, and another of the sky, for the light on the clouds, their groupings and cast shadows are all in harmonious accord with the lights, shadows, and atmospheric effects in the landscape beneath them. The clouds have solidity and variety of forms and differing densities; nothing to suggest a piece of accidentally stained paper. They receive light and throw shadows, they are near and distant, they belong to both earth below and the sky above. Colour is suggested in these productions, with motion, sunlight, heat, wind in the rushes, depth in the water, space in the atmosphere, birds in the trees, human pleasure and peaceful enjoyment, a spot to rest in, a spot to fish in, a spot to go a-dreaming in—in short, a picture as well as a photograph And all these things come from faithfully represented sunlight and air, in other words, from that sky which, as Ruskin says, "we never make the subject of a thought but as it has to do with our animal sensations. We look upon all by which it speaks to us more clearly than to the brutes"—he goes on—"upon all which bears witness to the intention of the Supreme that we are to receive more from the covering vault than the light and the dew which we share with the weed and the worm, but as a succession of meaningless or monotonous accidents too common and too vain to be worthy of a moment of watchfulness or a glance of admiration. . . . Who among the whole chattering crowd can tell of the forms and the precipices of the chain of tall white mountains that girded the horizon at noon yesterday? Who saw the narrow sunbeam that came out of the south and smote upon their summits until they melted and mouldered away in a dust of blue rain? Who saw the dance of the dead clouds when the sunlight left them last night and the west wind blew them before it like withered leaves?" I wish one could truthfully say that many photographers have seen and recorded these glorious sky pictures, catching their meanings and bringing to their expression in another language, that of Art, every power that language commands. But I think we can truthfully say that of late years quite enough has been seen in the way of cloud and sky photographs to inspire their producers with ambition and hopefulness for the artistic future of their art.

In another of his essays this greatest and most practical of all our art-teachers points out that there is always in the air when filled with sunshine a certain quantity of vapour, great in proportion to its brilliancy. This when there are no clouds present affects the entire space uniformly. On this vapour the clouds cast palpable, although very delicate and softly pronounced shadows, producing effects which the sensitised plate certainly receives, although they very seldom survive all through the trying processes of developing and printing to appear in the finished photograph, mainly, perhaps, because operators so seldom understand either their beauty or their meaning.

It would be otherwise, if, recognising both, they gave careful manipulation and chemical treatment to their preservation. It is these vapours which most palpably render visible those great fan-like "radiating shafts of light which are," says Ruskin, "one of the most valuable and constant accompaniments of a low sun. The denser the mist the more distinct and sharp-edged will these rays be. When the air is clear they are mere vague, flushing, graduated passages of light. When they are very thick they are keen-edged and decisive in a very high degree."

And this brings to mind a photograph I once exhibited and commented upon to illustrate a paper read before the South London Society many years ago. It was a large and wonderfully beautiful photograph, but while the sky gave us these radiating rays at their sharpest and brightest, indicating a dense quantity of this vapour in the atmosphere, the distant hills of the landscape associated with it showed that it was taken when the sun was high, and when the atmosphere was exceptionally free from mist or vapour of any kind. No one who had studied Nature and knew anything of aerial effects

could have perpetrated such a blunder, yet not one of the half a hundred or so of photographers present detected the blunder before I pointed it out and received, I am afraid, neither thanks nor compliments. I think it was our president (a scientific man of some rank, and a clergyman whom everybody loved and respected) who said in reply, in the kindest way possible, that such a mistake, if a mistake it might be called, was a mere spot on the sun which only increased the beauty and interest of such a very charming production, a sentiment which was received with applause. I endured the reproof patiently enough, but it was certainly discouraging. But the worst blow of all was that administered by a journalistic friend, who pointed out that even Ruskin's divinity in art, Turner, displayed a reckless indifference to facts in many of his most widely and enthusiastically admired works, for I could not deny the fact, although I might easily have pointed out how and why the facts which Turner ignored were not glaring impossibilities, but only those which were either of no pictorial importance, although topographically important, or those which stood in the way of pictorially demonstrating truths of a far more important and higher nature.

Hammerton, in his "Life of Turner," speaking of Turner's picture of Kilchurn Castle, painted in 1801, describes the scene it represents as more familiar to him than almost any picture. "I lived there," he says, "for years, and know the topography of the place quite thoroughly, with that minuteness which is only possible to a resident who takes the keenest interest in the neighbourhood where he lives and makes landscape painting his main occupation." Turner's view point was one at which the castle he represented must have been invisible. He put sailing boats where, because of the violent gusts of wind commonly encountered, no sails were used, because he wanted a something to cut the base line of his mountain, and throw the mountain further back. He made the castle, not the picturesque ruin overgrown with ivy it really is, but a clumsy, ugly square block of masonry unbroken by anything in the way of vegetable growth. He represented a peakless mountain sloping upward gradually by one rising abruptly to a peak at a height enormously greater.

Still, the picture is one of remarkable power and beauty, and moreover one in which the sky effect gives those radiating lines of light, and this vaporous atmosphere of which I have spoken. But the air through which we see the wild rugged mountain and grim old fortress, the lake, the low-lying clouds, cliffs, hills, and boats, is one and the same all over the picture. Turner never perpetrated such a blunder as the one I pointed out in a photograph, which, speaking topographically, was certainly more truthful and topographically valuable. "The real motive of the picture," says Hammerton, "was not Kilchurn, but the play of clouds about the crest of a Highland mountain—*which* mountain signified little. The mountain is any mountain you please, the castle is any castle you please. The clouds play about the granite peak, a shower falling here from their trailing fringes, a sunbeam flashing there on the topling silvery billows which are their ever-changing summits, a level wreath of white vapour clinging in the shelter of the peak itself, great volumes rolling and surging in the abyss of the deep corrie and on the steep stony sides of the mountains the purple shadows fall vast and swift, veiling each of them its hundred acres of desolation. Who thinks of man's works when he witnesses the majesty of the storms on the everlasting mountains?"

(*To be continued.*)

Two vacancies occur in the Postal Photographic Club. Applications, with specimen of work, to David Macadam, Carlisle City and District Bank, Haltwhistle, Hon. Sec.

The Central Photographic Club.

A GENERAL MEETING was held at Coleman's Hotel, Henrietta Street, Covent Garden, on Wednesday last, Mr. Geo. Mason, of Glasgow, in the chair. Mr. C. H. Oakden opened the proceedings by detailing the work of the executive committee in search of premises, and stated that the original plan of taking the Fleet Lane premises had been abandoned in consequence of difficulties with the landlords, and after considerable search the present premises had been decided on, where they had secured two rooms besides a large meeting room for the weekly meetings, and a dark-room 15 by 21 ft.

After considerable discussion the following rules were adopted:—

1. The title of the Club shall be the Central Photographic Club.

2. The object of the Club is to provide a central meeting-place for those interested in photography where they may enjoy social and technical advantages.

3. All gentlemen interested in photography shall be eligible for membership.

4. The annual subscription for town members shall be £1 1s., and for country members 10s. 6d. For life membership a payment of £10 10s. shall be required from town members, and £5 5s. from country members. The first 300 members will be admitted without entrance fee. Those joining after that number has been reached shall pay an entrance fee of £1 1s. for town members, and 10s. 6d. for country. Gentlemen residing within a radius of twenty miles of Charing Cross shall be deemed town members.

5. The management of the Club shall be vested in a committee of twelve town members, and six country members, four to form a quorum exclusive of officers, to be elected by the members in general meeting annually. The committee shall have power to fill up vacancies during the current year, and also to make bye-laws as may be found necessary, such bye-laws to be binding on the members after being posted in the Club-rooms.

6. The property of the Club shall be vested in two Trustees.

7. The President, Trustees, Hon. Treasurer, Hon. Secretaries, and an Hon. Librarian shall be elected by the members annually in general meeting, and shall be *ex-officio* members of the Committee.

8. All officers and Committee shall be nominated in writing at the ordinary meeting of the Club fourteen days previous to the annual meeting. The election to be by ballot at the annual meeting, verbally or in writing.

9. Candidates for membership must be proposed and seconded by two members of the Club. The name and address of the candidate, and the names of the proposer and seconder must be sent to the Hon. Secretaries at or before the stated meeting previous to the one at which it is proposed to submit such candidates for election. Such name shall be read by one of the Secretaries to the meeting, and posted on board till the next meeting.

10. The election of members shall be by ballot at any stated meeting of the Club, and a vote of four-fifths of the members present and voting shall be necessary to elect a new member.

11. Every candidate on his election shall be notified in writing with a request for payment of his subscription and entrance fee.

12. No member shall be entitled to use the Club until his subscription for the current year has been paid.

13. The annual subscription shall be payable in advance on the first day of October in each year.

14. Members joining the Club before December 31st shall pay the full subscription. After the end of December and before March 31st the payment shall be two-thirds; after the end of March, and before August 31st, one-third; the subscription of any member elected after August 31st shall be considered payment for the following year.

15. Any person who shall by any means cease to be a member of the Club shall, nevertheless, remain liable for and shall pay to the Club all moneys which at the time may be due by him to the Club. Any person ceasing to be a member from any cause shall forfeit all interest and rights in the Club.

16. Any member making himself obnoxious to the members of the Club shall be reported to the Committee, who shall investigate, and, if necessary, call a special meeting of the Club to discuss the matter; then, if the majority so decide, the offending member shall be expelled the Club, and lose all interest and benefit in it, such decision to be taken by ballot.

17. An annual general meeting of the members shall be held in the first week in October to receive the report of the Committee, to pass the accounts, having been audited by two members, not being members of the Committee, chosen at the previous meeting of the Club, to appoint officers for the ensuing twelve months, and to elect members of the Committee to supply the places of those retiring. The newly-elected officers and members of the Committee shall come into office at the conclusion of such meeting.

18. Ordinary meetings of the members shall be held weekly.

19. The committee may, whenever they think fit, and they shall on a requisition made in writing by ten members, convene an extraordinary general meeting. Any such requisition shall specify the object of the meeting required, and shall be signed by the members making the same, and shall be delivered to the Secretaries.

20. The Chairman shall have a casting vote in addition to the vote to which he may be entitled as a member.

21. No alteration of, or addition to, these rules shall be made except at the annual meeting, or at a meeting especially convened for that purpose. Notice of such intended alteration or addition shall be posted on the notice board not less than fourteen days previously.

The Chairman next read the following address:—

"At this, the opening meeting of the Central Photographic Club, I wish it unbounded success, and may it have a big future before it. If the success prove equal to the need for such an institution, it cannot fail to be successful beyond our anticipation. After much trouble and anxiety in looking out for suitable accommodation for us, the executive have done well in securing these premises, where we will find ourselves free from so many conditions and restrictions that clogged up the freedom of arrangements in all previous negotiations for a suitable place.

"Here we have comfortable rooms, refreshments at hand always, lodgings if desired by our country friends, and in a very central position—all these combined should prove no mean factor in inducing all the Brotherhood of the Black Art to gather round and claim membership. The fee is so small that it must come easily within reach of all, and not to be considered if the possible advantages are put against it.

"I have said elsewhere that, in the interests of the provincial photographer such an institution is of incalculable benefit, because it provides for him a place where he can at all times find kindred spirits and special interests there focussed, so to speak, and saving no end of trouble in going in search of friends and information; and as a centre for informal meetings it should be of great value.

"I place a great value on informal meetings, where a few friends, over a pipe, talk out the many experiments (successes and failures) that one and all have experienced in their professional career. This is an education of itself, and that of no mean order. As a place for formal meetings of all professional kinds this club should hold a very prominent place, and there is no reason why many of the London Societies should not make it their head-quarters, and by this means draw the bonds of brotherhood closer.

"Many other points of mutual interest will suggest themselves to you as we proceed on our way; and, wishing the enterprise all the good that can be wished, I launch our bark upon the photographic stream.

"And, in closing, I would propose a hearty vote of thanks to the executive for all the labours that they have undergone—labours that have so successfully terminated."

Mr. Mason having been cordially thanked for his address, the election of officers was proceeded with, and resulted as follows:—

President: George Mason. *Trustees:* Thomas Fall and George Mason. *Hon. Treasurer;* John Howson. *Committee:* T. Sebastian Davis, Dr. G. Lindsay Johnson, Alexander Cowan, Birt Acres, Robert Beckett, A. Horsley Hinton, F. W. Hindley, J. S. Teape, F. P. Cembrano, jun., Andrew Pringle, H. Van der Weyde, T. E. Freshwater, R. Keene (Derby), Lyddell Sawyer (Newcastle), W. M. Warneuke (Glasgow), J. Stuart (Glasgow), Paul Lange (Liverpool). *Hon. Secretaries:* W. Fenton-Jones and C. H. Oakden. The election of Librarian was left to the committee.

The meeting night was fixed for Friday in each week. The Club premises will be opened on Monday, October 2nd. A vote of thanks to the chairman concluded the proceedings.

The Camera and the Pulpit.*

By the Rev. Dr. A. W. Patten.

The art of writing or recording by means of light, which we understand by "photography," has come to be recognised as one of the most valuable instruments of modern civilisation. There is scarcely a line of human achievement which has not found in it a servant whose assistance has become indispensable in bearing old burdens and in assuming new ones. Especially is this the case in the wide field of education. Intellectual culture and moral culture both have found it profitable and necessary to lay tribute upon the photographic camera and upon its necessary adjunct, the optical lantern.

In all education the true method is to proceed from the concrete to the abstract—from the objective to the subjective. This is true not only in school life, but in the large education of the masses of the people. It is interesting to notice the vast development of the illustrated material now presented to the public in the periodical press as well as in the stately volume. Hardly a daily paper do we find which does not boast of its special artist, and every subject must have its appropriate woodcut, engraving, or photogravure. This has been brought about to a great extent by the use of the camera, by which the vast majority of this illustration is made possible.

General science, the fine arts, commerce, the secular school have all invoked the light of heaven to shine upon them. Why should not the teacher of religion also invoke the aid of this servant of God to render vivid and clear spiritual truth?

The camera has received a hearty welcome into the studio, the manufactory, the schoolroom, the lodgeroom. It has also received a like welcome in recent years into the Church. Religion has its basis in history. It expresses its symbols in art. The earliest forms of architecture as well as the highest expressions of art are religious in their motive. The temple became the repository of all that was most glorious in sculpture and painting. The history of the religions of mankind cannot well be studied without a knowledge of the monuments of past civilisations.

In recent years there has been a great advance in the study of archæology. Here the camera has come in as a large factor. The growth of the study of history has been very great, and the study of comparative religions has been a part of the general historical movement.

In the teaching of the life and history of the Church the pulpit cannot do without the camera. Christian art and archæology go hand in hand. The inscriptions are best copied now by the camera. Many places there are where the use of the squeeze paper and brush are indispensable, but in most instances photography saves labour and accurately preserves the record. In the study of the remains of the early centuries of the Church, the religious teacher finds that the picture made on the spot is the best means of rendering clear and vivid the thought he wishes to present. The work done by the Palestine Exploration Fund and the Egyptian Exploration Fund within the past twenty-five years has brought to light a vast lot of material whose richness and importance as contributions to the study of the religious life of these countries is simply inestimable. Thus the study of the Christian evidences from the standpoint of archæology, the study of the religions of antiquity as preserved in their monuments, the study of the development of Christian art as found in the catacombs and elsewhere, is rendered possible and exceedingly valuable by the rich fruits of the camera.

The Christian missionary to foreign fields now goes to his work armed with his camera and optical lantern. He has found that the masses of the people are attracted by the pictorial presentation of Bible themes. In the great "melas," or fairs held in various parts of India may often be found, in the midst of the thronging thousands, the tent of the missionary, who attracts the attention of the people by his screen projections and gains audience for the truth, which is thus carried through the eyes to the heart.

The teacher of the modern Sunday-school has likewise added to his maps and charts the aid of photography to educate his fellow-workers. To reproduce a map, to illustrate the life of our Lord, or the journeys of His apostles, to bring before the people the manners and customs of Bible lands, the beam of light as a swift-winged messenger comes to his aid. In studying recently the Book of Nehemiah and his great reform, during which he built up the dismantled walls of Jerusalem, discussion turned upon the course of the walls and the general topography of the city. From views taken on the spot with my own camera a few months ago, it became possible to illustrate the subject in such a manner as to invest it with the utmost reality and vividness.

In the ordinary ministrations of the pulpit the camera is coming to be recognised. Under certain circumstances and on given occasions the use of the screen projection is assuredly a powerful adjunct. Its use may, of course, degenerate into a mere spectacular performance which is only a common show; but in proper hands beneficent and lasting results must certainly follow. A pastor in England affirms that through one of his illustrated sermons, delivered at various places, over three hundred persons have been roused to lead a better life. The illustrated sermon may have as real dignity and effectiveness as the illustrated volume, and be more impressive because of the added element of personality.

The existence in England of what is called the "lantern service" is well known. Illustrated themes are published and slides are rented. Considerable space was given to this subject some months ago in the *Review of Reviews*, the article being from the energetic pen of Mr. W. T. Stead In this country the interest in this kind of work has greatly augmented within the last ten years. Some of our churches are now provided with apparatus for this purpose. One church recently built in Chicago has a laboratory for the manufac-

* Read at the World's Congress of Photographers.

ture of the gases, and the pastor, who it is needless to say is a thoroughly live man, has great success in presenting the truth thus illustrated to his people. Another church, in Minneapolis, I believe, is provided with a screen, stereopticon, etc., all at the control of the pastor by means of electric communications. If he desires while preaching to illustrate his subject, he may by pressing the respective buttons unroll the screen, turn out the lights, and signal the operator for the picture. What is more, in many of our theological schools may be found a complete optical outfit for the purpose of teaching Christian art, architecture, paleography, and the latest results in exploration and discovery in Bible lands.

All this illustrates the statement that "science is the handmaid of religion," and none are so ready to acknowledge this as the Christian teacher. Many clergymen are expert amateur photographers, and are finding the camera a valuable adjunct in their work. It must not be understood that the illustrated sermon is in any sense to supersede the ordinary service of the Church, but find its place in specific lines, as above indicated. The Church is more and more to use the camera—(1) to teach Christian art and archæology; (2) in work in the foreign mission fields; (3) in the Sunday-school and normal work; (4) in special services to children; (5) in evangelistic services among the masses; (6) in providing a high class of instruction along the line of art and history.

Films in Relation to Amateur Photography.*

BY GUSTAVE D. MILBURN, Rochester, N.Y.

THE subject of celluloid film is of considerable interest to a great number of photographers. The two chief points to be considered are:—

First. The reason for substituting celluloid film for glass as a support for sensitive bromide of silver emulsion.

Second. Its practicability, and in what form.

The first can be answered very quickly, namely, the main object is to overcome bulk and weight. The question then arises: Is this greatly to be desired? Yes, to the tourist pursuing photography as a pleasure, as well as the outdoor photographer, a light, compact outfit is a great desideratum. For instance, go back to the old wet-plate days and compare that outfit with one of the present day, and note the greater opportunities of the latter.

The second point is more open to discussion, especially considering that manufacturers of the rolled celluloid film have made complete failures of producing the commercial article. But perhaps before we go any further it is as well to explain the difference between rolled celluloid film and cut-sheet film. It should be understood that the former is made by spreading celluloid in a plastic or semi-fluid state on a long table made of several plate-glass slabs and allowing it to dry, while the latter is sliced by machinery from a solid block of celluloid. Cut-sheet film, when properly manufactured, is allowed to get well seasoned (several months' seasoning) before it is coated with the bromide of silver emulsion, thereby partially ensuring the sensitive emulsion from coming in contact with the harmful volatile parts of the celluloid. On the other hand, the rollable film from necessity is coated with the bromide of silver emulsion within ten or twelve hours after the celluloid is first spread on the glass table. To this, in some extent, is due the rapid deterioration of the bromide silver emulsion. It also accounts for the edges of a rolled film drying, leaving the centre full and baggy, and in practice making a sharp picture one of the impossibilities. Rollable film is usually coated with the sensitive emulsion before the celluloid is stripped from the table, which makes the stripping a very delicate operation.

It will be remembered that I have mentioned the table upon which the celluloid is spread, as being long. Several glass plates are joined to make the whole. To a casual observer it would seem as if the glass plates could be so well joined that the joints would not materially show in the film; but, alas, not so; contraction and expansion play an important part, and will not permit it; the result is that the semi-fluid celluloid enters the joints and very annoyingly appears in the finished negatives, giving the impression of the celluloid having been crudely joined. This nuisance, as if not satisfied, goes still further, and often imprints itself on several of the adjacent layers of film in the roll.

But the most serious defect with the rolled film will be found in its sensitive surface contracting when first spooled. It is a well known fact that in rolling or bending any substance the inner side contracts and the outer side expands, the particles striving to re-arrange themselves to the new existing conditions.

So with the rolled film, which is necessarily spooled when fresh, a condition where the gelatine and silver particles are to a greater degree susceptible and ready to conform to the new condition brought about by rolling under tension. The particles soon become set, and although the film is unwound for the exposure, long enough time is not allowed before exposure for the particles to again re-arrange; therefore the exposure is made when the gelatine and silver particles are in a contracted state. In development, the gelatine particles swell and assume about the same relation as when the emulsion was first spread upon the celluloid. Course, grainy, and foggy negatives must be the result, and to this rough treatment of an extremely sensitive substance must be attributed a generous share of the rollable film failures.

Cut-sheet celluloid film, as before stated, is well seasoned before being coated with emulsion, and is transparent, and practically lies flat. Then what have we to contend with in manufacturing a reliable practical cut-sheet film having all the desirable qualities of a glass plate, and still embodying the two chief qualities, *i.e.*, lightness and compactness? This and nothing more; make the celluloid, after seasoning, inert and inactive to the bromide of silver emulsion, and devise practical mechanical instruments in which to use it.

I believe this will be accomplished soon, and when it is, glass plates will be a back number for outdoor photography.

* Read at the World's Congress of Photographers.

Humours of Photography.

BY R. HYSLOPIAN MACHUS.

PHOTOGRAPHY, not unlike most other things, has its light or humorous side, and it is a great relief to turn occasionally from the abstruse problems of photographic optics, or the complex muddles of the "combined toner and fixer" (and destructor), to the farcical freaks and pitiable plights which occur, at some time or other, in the photographer's career.

It is a strange and noticeable fact that, when one hears humour mentioned in connection with photography, the "blighted amateur" and his escapades are usually coupled therewith, and there cannot be much doubt but that the detective camera has been the cause of much of the tomfoolery with which amateurs are "debited" in these days. This, of course, should not be so, but putting a hand-camera into the hands of some people is as dangerous as presenting a three-year-old child with a hydrophobical "bow-wow."

Ho! how fine and large many a fellow imagines himself as he stalks through a public thoroughfare with detective camera in hand, and eye-glass at eye, gaping about like a wandered infant in the heart of a busy city, for victims. Let us follow one of the species. He eventually arrives home (that is the unfortunate point with most of them), full of "glee, conceit, and exposed plates," and in reply to—say his little sister—exclaims, "Oh, yes! ducky, I've got some capital views, just splendid—chiaroscuro perfect, you know. Let me think now. Oh! I don't remember all I took, but there was one of a young ass with his sweetheart walking along, y' know, and another of a poor blind idiot sitting by the roadside. On this exquisite street scene I gave the 2,000th of a second—wonderful, isn't it, Sis?" (It was!)

After this tirade the little girl innocently but pertinently says, "Yes, Ebenezer, but you might let me see them!"

"To be sure, dear, in a little," replies our "photofanamaniac," as he darts into his half dark-room, lights his lamp, removes the plates from the camera, flops one into the developing dish, and splashes an unknown quantity of ready-made developer over it (the name of the solution I regret to be unable to give, as all but about six syllables of it has escaped my memory). However, two minutes pass, no image appears on the plate. Three minutes, still no image. Five minutes, and so on, less image and more forcible English, until a certain fact dawns upon his simple brain, and he exclaims, "Hang it all! I've gone and exposed all the pictures on the same plate!" English camera makers be blow'd!

It is not, however, only the novice who walks with an awkward and funny gait along the thorny path of photography. Not at all. How many of the experienced amateurs who may read this paper, have not at some time had occasion to exclaim something equivalent to "Eh! ma guns! ye wid think ye had just new bocht yer spy-gless!"—which was said to me when I arrived one day at a charming scene a few miles from home, and when I discovered that I had been outwitted by my lens, which the while lay snugly in its case at home.

A friend of mine a doctor, and a good photographer, once performed the following feat: He was, one fine day, attacked with the notion to photograph the "hall" in his house, with the magnificently carved oak chairs on either side, coloured-glass lamp hanging gracefully from the exquisitely painted and corniced ceiling, the hat-stand, prettily patterned linoleum—in fact, everything appertaining to the usual run of halls. Well, he rigged up his machine, and spent ten minutes in finding a suitable point of view, another twelve minutes in arranging the accessories at hand, and removing

a hat which had seen and "felt" several summers at the sea-side, and lastly, three minutes in stopping the hall-clock which was going too fast for the necessarily prolonged exposure.

Now, everything was ready for the said exposure, except the weather, when an abominable black cloud crossed the sky so aggravatingly slowly, and left an insufficient supply of light for photographic purposes indoors. At last, after the further lapse of 7¾ of a minute, it cleared up again, during which time my friend the operator was rapidly catching cold.

"Now's the hour and now's the second," and the cap was just about to leave the lens, when, blame the thing! the pretty (?) French grey and "greenery yaller" feline specimen sauntered leisurely across the hall from the dining room to the drawing-room sofa for its afternoon nap. "How fortunate," remarked my friend, "that I had not the cap off altogether!" Other things were said, but the foregoing remark will not in any way decrease the circulation of this journal. Finally, the exposure was made, which lasted exactly 10½ minutes—all the while a chilly draught came whiffing in beneath the front door, on to my friend's person.

Eventually the camera is bundled into a side room, and with the plate-holder clasped fondly to his bosom—to defy any inquisitive light — the doctor entombs himself in his dark chamber. Then he spends some minutes in preparing a special developer for interiors and lastly, opens the dark-slide to remove the exposed plate for development, when, to his unlimited disgust, infinite annoyance, and unbounded difficulty in suppressing an oily flow of "unparliamentary" language, he discovers and remembers that he had not performed the very necessary initial operation of *placing a plate in the holder*. So that he spent nearly sixty minutes in the unenviable purchase of a smart dose of cold.

"Call that humour?" he has since said to me. "I call it bally cussedness!"

(*To be continued.*)

Catalogues.

Wm. Hume, 1, Lothian Street, Edinburgh.

This catalogue contains a full description of the various patterns of Cantilever enlarging apparatus, for which Mr. Hume is now so well known. Besides this, it has some valuable hints on enlarging, which are well worth studying, and would save many a beginner in this branch failures and troubles.

Exhibitions.

Society.	Entries close.	Opens.	Closes.	Address of Secretary.
Hove Camera Club	—	Sept. 20	Sept. 21	H. Emery, 142, Church Road, Hove.
P. S. G. B.	Sept. 13	Sept. 25	Nov. 15	R. Child-Bayley, 50, Gt. Russell St., W.C.
Hamburg	—	Oct. 1	Oct. 31	Das Ausstellungs Committe, 33, Schwanenwik, Hamburg.
Photographic Salon	Sept. 27	Oct. 9	Nov. 11	Sec., 215, Shaftesbury Avenue, W.C.
East London	Oct. 10	—	—	W. R. Gould, 61, Gibraltar Walk, E.
Hackney	Sept. 30	Oct. 17	Oct. 19	W. Fenton Jones, 12, King Edward Road, N.E.
South London...	—	Nov. 7	Nov. 11	C. H. Oakden, 53, Melbourne Grove, Dulwich, S.E.
Leytonstone Camera Club ...	—	Nov. 20	Nov. 25	A.E. Bailey, Rose Bank, South-west Road, Leytonstone.
Stanley Club	Oct. 31	Nov. 17	Nov. 25	W. D. Welford, 57 Chancery Lane, E.C.
Madras	—	Dec.	—	Hon. Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28, 1894	113, West 38th Street, New York.
Midland Camera Club ...	Sept. 20	Oct. 2	Oct. 14	C. Jevons Fowler, 4, Woodstock Rd., Moseley, Birmingham.

Dr. J. M. Eder has just had the title of "Riegerungsrath" conferred on him by the Emperor Francis Joseph.

Thiotone, Messrs. G. W. Wright and Co.'s special toning solution, has been successful, and is making steady headway.

Holiday Resorts and Photographic Haunts.

THE WEST SUSSEX QUADRILATERAL.

By the Editor.

Singleton, Goodwood, Halnaker, and Boxgrove.

Having worked for one day by myself at Pulborough, Hardham, and Stopham, I went on by train from Pulborough to Cocking, to meet Mr. Marshall at Bex Mill, where one of his old boys, Mr. Wells, lives. Bex Mill lies in a hollow, and is almost midway between Cocking and Midhurst. Having been hospitably entertained by our kind host and hostess, I am shown round the neighbourhood, and down in the valley quite close we find a rustic bridge with a little waterfall underneath it, and the small stream running over the road. Here, although very late, we make an exposure, and obtain a very fair negative of the ford, the bridge, and the woods. Back again to the mill, and thence on to the two ponds, where, both on the upper and lower, there is plenty of material for pictures, plenty of water, with rushes and water plants nicely framed in by trees, a white swan to break the foreground, and on the path up many a charming peep, with a waterfall here and there. At least one day could be spent here alone. Back again to the house, where we sit out on the lawn and watch the moon rise, and discuss the Irish question quietly and calmly, as befits the scene. Stretched before, there is a lovely breadth of upland clothed with trees and broken here and there by a glade and the full moon shedding its tender golden light over all. Cocking is a small place, and boasts, we believe, of two inns. At one they were full, and at the other we were informed by the proprietor, with much scratching of head, that "the missis were out and I doan't know about a bed; we moight turn out the youngsters and you could hev their bed." This we decline, however, and so after supper set off for Midhurst and its "Spread Eagle," whence, after a good night's rest, we start next morning for Singleton, picking up Mr. Marshall on the road at Cocking Station.

Plenty of work may be done in Singleton, though the village and church is again a long way from the station. The church is well worth a plate, both inside and out, and the chancel, with its two altar tombs and its carved altar piece, is also a good picture.

Leaving Singleton, we cross a field, and then have a precious stiff bit of collar work right up what they call the Trundle till we get on the Goodwood racecourse. Just to the right are the remains of a Roman encampment, which, of course, we visit, and from the vallum what a magnificent panorama we see. On the right Southampton and the Isle of Wight; nearer, Chichester Harbour, the Cathedral, Campanile, and all the fertile plain of Selsea, Bognor, Littlehampton, and right in the distance on the left Beachy Head. Certainly the panorama spread out before us is well worth a climb up. Leaving the encampment, however, we climb down the slope, past the back of the grand stand, and turn down to the right, through what is known as "The Silent Wood," which is nothing but magnificent silver birch trees, where, curiously enough, never the sound of a bird is heard. For some reason or other, birds will not alight in these woods at all, although just across a deep hollow plenty of feathered songsters are to be found.

Always downward, on past the pheasantry, past the side of Goodwood House, and by some of the biggest cedar trees I ever saw in my life, we get out on to the road. Here in an inn, the "Richmond Arms," we halt for refreshments, and as it is close on three o'clock, and we have had nothing since 8 a.m., we gladly welcome the cold viands put before us. This inn is exquisitely clean, quiet, and very reasonable in charges, and the neat-handed Phyllis who waits on us a stately and exceedingly pretty girl. However, we have yet to get on to Halnaker, which for some unaccountable reason is pronounced "Hannaker." This was the old house of the Richmond family, but is now in ruins, the interior being an orchard, where we fill our pockets with apples—by permission, of course. Try as you may, you cannot make much of this place; it stretches right across the plate, and no manœuvring will make a presentable picture of it.

Leaving the house and the park behind us, we again get out on to the road, and make for Boxgrove, a perfect mine of pictures for the architectural photographer. Here we expose six plates, and could have done more only our stock was out, and we had to get home that night. Leaving Boxgrove then behind us, we reach Tangmere, and here, at the "Tangmere Hotel," we get some tea; beautifully clean again, quiet, and right in the country. Any one desirous of spending a holiday in the quadrilateral might well make this place their head-quarters, and the good lady, Mrs. Parvin, would be only pleased to take them in on really reasonable terms. It is within reach of Chichester, Bognor, and Brighton, and in a country rich in pictures.

Finally across fields, down lanes, across more fields, following the paths, which seem to go all round the compass to get to one

point, we reach Drayton Station, and thence home, regretfully cogitating that we are very near the end of our work, having only Chichester, Bosham, and Barnham to finish up.

SHORT, SUGGESTIVE NOTES.

BY E. J. MARSHALL.

Itinerary.—From Selham Church, Lodge Bridge, over the Western Rother, through West Sussex lanes to Cowdray Park, Easebourne, Midhurst.

The Western Rother.—The river is crossed half a mile from Selham Church. It rises in Hampshire, not far from Gilbert White's, Selborne, enters Sussex near Durford Bridge, and joins the Arun at Stopham.

To the beautiful district through which it flows, the little river, with its streams from north and south, adds many a charm, to which, as at Lodge Bridge, the Domesday Mills contribute.

Close to Lodge Bridge, in smuggling days, a vigilant excise officer was suspended to the willow by his hair, and left hanging for hours with his body dangling in the river.

Now for Easebourne.—Three miles ahead. In two hours we will meet you at the Lodge Gates. May you find the deer in the glades of Cowdray.

At the Lodge Gate, Easebourne.—Please listen to the following sketch, pure matter of fact though it be, for without it every step taken till Midhurst is passed will find you a loser:—

Easebourne.—The Essbourne of Domesday, there mentioned as one of the "hundreds" whose feudal lord was the mighty Roger; that "territorial polypus" clinging to the soil in every direction in this our excursion district. Domesday makes no mention of Midhurst. We will trace its history.

The De Bohun.—Out of the "hundred' of Easebourne King Henry I. carves the harony of Midhurst for Saveric de Bohun. The De Bohun builds his castle on St. Anne's Hill, and the town of Midhurst grows around it; the castle decays, its protection is less needed, and the home of the De Bohun is moved to a site on the lower ground at Cowdray.

The Owen.—The heiress of the De Bohun marries Sir David Owen, the grandson of Owen Tudor, grandfather of our Henry VII.

The Fitz William.—Who becomes Earl of Southampton, to whom the estate is sold in 1528 by Sir David Owen.

The Lords Montague.—Sir Anthony Brown becomes possessor of Cowdray by inheritance in 1543. This Sir Anthony, though created Viscount Montague by Catholic Queen Mary and her Spanish husband, Philip, and himself a staunch Catholic, appears at Tilbury with 200 horsemen to support Protestant Queen Bess against the Armada of this same Philip.

The Pontz Family.—Seven Lords Montague follow in succession, and the eighth lord is drowned when madly attempting to descend the Falls of Schaffhausen in a small boat. Cowdray then becomes the property of his sister, Mrs. Pontz. Her two sons are drowned within sight of their parents off Bognor.

The Lords Egmont.—The three daughters of Mrs. Pontz (each the wife of a peer), Lady Clinton, the Countess Spencer, and the Marchioness of Exeter, find in 1843 a purchaser for Cowdray in Lord Egmont, whose nephew now holds possession.

Easebourne Priory.—Founded by a De Bohun about 1273 as a refuge "for noble and gentle poverty," represented in the persons of a prioress and six nuns. Later on, its resources were taxed by ten nuns and two chaplains. (Even at the present time St. Mary's Hospital, Chichester, has two chaplains for its eight sisters!) The Priory was not well managed. The official visitors in 1441 report that "the prioress feasts sumptuously both when at home and abroad," and that "she is very choice in her dress, so much so that the fur trimmings on her mantle are worth a hundred shillings." The trimmings they confiscate to pay the Priory debts. We hear of continual squabbles between the prioress and her nuns, till the Priory is dissolved by that plunderer, Henry VIII., and its buildings are given to my lord FitzWilliam.

The Priory Buildings.—The dwelling-house before us held the dormitories and cells. Permission will be given to visit the old refectory and pigeon-house. Do not tax the great kindness of Mr. Tallant by asking for further privileges. The refectory is now a farm storehouse; climb the steps to the temporary floor, and notice the walled-up painted windows.

In imagination recall "that Tewsday" on which, invited by Lord Montague, "her Majestie went to dinner at the Priory, where my lorde himselfe kept house, and there was she and her lordes most bountifully feasted."

Easebourne Church.—"New cloth on an old garment," but by workmen who have NOT made the rent worse. To the tower of the "Perpendicular period" has been added a rebuilt church, with an additional aisle on the north side. The aisle on the south side, used by the nuns, and once approached by a cloister from the priory, was in a ruinous state. The monuments tell their own tale. Does our short sketch help them to do so?

Note in the north aisle the effigy of Sir David Owen. A puzzle, the knight is wearing the dress of an earlier period than the date of his death. The solution? David's "will" shows that the tomb and its effigies of both himself and his wife were ready some forty years before he died. Where is Lady Owen's effigy? Could the old Puritans tell us? Much mischief has been laid to their charge.

Walk on to Cowdray, leaving the high road as soon as possible.

Cowdray.—Mr. Lower says the name is common in Normandy, and signifies a grove of hazel trees. The dame in charge of the ruins is the grand-daughter of an old servant of Cowdray House, when the fire destroyed it. Question her well, consult Kelly's Directory, and enjoy your own thoughts. To help these thoughts shall be our aim.

Refer to our sketch on reaching Easebourne.

The Earl of Southampton was the founder of Cowdray; to Sir Anthony Brown its magnificence is due. His son, Lord Montague, was the Royal entertainer. The fire destroyed Cowdray during the night of the day following the death of the eighth Montague. One of the few valuables saved from the fire was "a booke of orders and rules," by the second Lord Montague, the boy taken by his grandfather to Tilbury. This book is given in full in the fifth vol. of the Sussex Archæological Society.

Stand on the ruins of the Old Buck Hall, and let us by its aid picture the Cowdray of 1595. "Sir," said Dr. Johnson, on his visit to Cowdray, "I should like to stay here for twenty-four hours. We see here how our ancestors lived." But this was before the fire.

In Cowdray Back Hall at 10 a.m.—It is covering time, the household is mustering to prepare the tables for dinner. The steward in his gown is at the uppermost part of the hall; around him are his chief officers and some visitors. The usher of the hall sees that the tables are covered with white cloths, and that the salt-cellars and trenchers are laid. Enter the yeoman usher conducting the yeoman of the ewry and pantry. Reaching the middle of the hall each bows reverently, and the bow is repeated as the table is approached. The usher kisses his hand and places it in the centre of the dining table to show where the cloth is to be laid; his subordinate kisses the table. The yeoman of the pantry then places the salt, the trenchers for my lord and lady, the rolls, knives, and spoons, making a little bow as he lays each article down, and a low bow when he has finished. The three solemnly bow and retire. Enter the yeoman of the cellar, who dresses the sideboard with wines and drinking cups. The yeoman of the buttery follows, and places on the sideboard pewter pots and jugs. It is now "dynner tyme," and the gentleman usher proceeds to his lord's apartment, knocking, though the door be open, to receive his commands. Having received them, and seen that the carver and sewer have performed their ablutions, he stands at the screen and with a loud voice exclaims, "Gentlemen and yeomen, wait upon the sewer for my lord!" Half-a-dozen gentlemen and yeomen then accompany that officer to the dresser.

On their return the usher of the hall cries out, "By your leave, my masters," and all present in the hall stand up reverently, while the procession of the great lord's dinner passes through, preceded by the usher of the hall as far as the dining-room. Here he is met by the gentleman usher, who sees the dishes placed on the table. It has been his duty, while the meats were roasting, to see that no one turned his back on them.

My lord now enters, leading his lady by the hand, followed by her gentlewomen. The gentleman usher, "all dynner tyme," has "a vigilante eye over those who sitt at the table," and when "he sees ytt the tyme," he sends the sewer for the second course, which like as before is "reaceaved at the great chamber dore, brought to the table and orderly placed thereon."

Dinner over, the cloth is removed; towels, basins, and ewers are produced, and these the absence of forks renders specially necessary. The attendants are now dismissed and take their dinner at what is termed the "second sitting" in the hall.

The steward and those who sat at his table repair to the lord's dining chamber, and remain in attendance till the gentleman waiters return, and my lord rises from the table.

We must not venture on the six days' visit of Queen Elizabeth The kitchen now shown was none too large, for the Sunday's breakfast included three oxen and 140 geese. We leave Cowdray, cross the arch where the drawbridge once stood, and walk by the Rother to St. Anne's Hill.

St. Anne's Hill.—First admire the view from the summit, and realise how suitable a site it was for the Castle of the De Bohun. The fosse on the west side is on too high a level to have been filled with water. Note the deep sloping trench on the north side of the mound; this continues on the two sides of the castle grounds. The small field on the west is called the "Court Green," and was probably an enclosed court for the protection of retainers. In the north-west corner, in private grounds, the chapel of St. Anne's once stood, connected with the castle by a causeway. The piece of

water on the south was formerly the ornamental lake, and connected with it is the "close walk," in which were given those sumptuous out-door entertainments to Queen Elizabeth.

Midhurst itself.—A study for old houses (see previous notes). Would that the old house belonging to the chapel of St. John at Jerusalem were now on view! The Catholic Chapel stands on ground forming a portion of "The Liberty of St. John," still independent of the manor and borough.

The Knight Hospitallers of St. John of Jerusalem.—In 1048 a monastery and hospital were founded at Jerusalem for the protection and care of pilgrims. The order increased in influence and wealth, came to England, and a house was built for them at Clerkenwell. Their superior had a seat among the Lords in Parliament. They conquered the island of Rhodes, acquired possession of the property of the Knights Templars on their suppression, and finally settled in Malta, from which island they were expelled by the French in 1798.

Midhurst as a Parliamentary Borough.—First represented in 1311 by two members chosen by less than forty burgesses. The "nonæ returns" (see last notes) show that Henry Boteler, one of its first two members, had as taxable goods, one horse worth 6s. 8d., two oxen worth 8s., and two pigs worth 3s. 4d.

Silent Voters.—Some tenements, conferring votes on their owners, being pulled down by Lord Montague, each tenement was represented by its stone set in a wall, and on which was inscribed "A Burgage," so that "the very stones at Midhurst appeared as voters."

The Church, formerly a chapel-of-ease to Easebourne. Visit the church with Parker's glossary, and consult Kelly's Directory at the handsome and convenient public hall.

From Midhurst to Chichester, an enjoyable railway ride of some 11 miles, in spite of the tunnels; regard as compensation for temporary darkness, beautiful surprise peeps on leaving them. The average distance between each station is 2½ miles. Each station may well be made a halting-place.

At Cocking we enter the Downs. Its church, charmingly placed, represents the Early English and Decorative styles. Follow the stream flowing from the hills, past picturesque Bex Mill, with its most worthy miller, and Cobden's House at Durnford. This stream turns three Domesday Mills ere reaching the Rother. Your walk will place you in sympathy with Cobden, who having made his fortune by cotton-printing, could yet express the opinion that had he the casting of the *role* of all the world's actors, he would not suffer a cotton mill or manufactory to have a place in it. *Cobden was a West Sussex man.*

Cobden's birthplace and the estate connected with it were presented to him by national subscription. He pulled down all the old house except his mother's bedroom, and built the present Durnford.

Singleton, the next station. A beautiful walk through the village, over Rook's Hill, past the Race Stand to Goodwood. The stream is the upper course of the Lavant, which has been termed the *river*, on which Chichester "stands." Wait until you reach Chichester.

You will enjoy a stroll through the village and a visit to the church. Note the "stoup" in the porch; also the pulpit reached by a staircase in the wall, made probably for the old rood loft. But it was not unusual for pulpits to be thus entered in the Perpendicular period. Note the beautiful reredos, the tombs in the chancel, the tablets to Danel Court, and to the huntsman Johnson; the Saxon window looking from the belfry of the Norman tower into the nave and chancel, of the Perpendicular period, built after a fire in the fourteenth century.

To Rooke's Hill.—On leaving the church take the pathway, skirting the churchyard, and make for Rooke's Hill, said to have derived its name from a chapel to St. Roche, which once stood on it. Halting for a rest, look back at Charlton Forest—portion of the old forest—of the very olden time. Here the deer were hunted, now the fox. "When I am king," said the Duke of Monmouth, "I will keep court at Charlton."

(*To be continued.*)

Lewisham.—On the 15th inst. ordinary meeting, Mr. Davidson in the chair. After the routine business, Mr. Morgan, of Messrs. Fuerst Bros., demonstrated with metol and amidol, and his clear exposition of their various properties and uses, together with those of glycin, was followed with much interest. Amidol is the simplest in use, being a one-solution developer, gives negatives quite free from stain, but does not keep indefinitely in solution. It is a good way to make a stock solution of sodium sulphite, and add the dry amidol as required. Metol gives no difference in results, but is a two-solution developer, and therefore is a handy one for pyro workers to adopt, and keeps a very long time. The next meeting will be a members' lantern evening on October 6th prox.

ILFRACOMBE AND DISTRICT.

In and around Ilfracombe there is an immense variety of work to be done by the amateur, embracing sea, landscape with lovely valleys, quaint villages, old cottages, grand rocks, and bold coast; in fact, the whole district is a perfect paradise, and well deserves the title of "the most beautiful sea-side watering place in England."

There is plenty of work for both hand-camera and tripod; those who like instantaneous shots at steamers, yachts, or large ocean sailing vessels towing up or down channel, can indulge to their hearts' content from the end of the pier. The light after mid-day is best, as the sun is then sufficiently round to light up Hillsborough, which makes a bold and magnificent background.

In the inner harbour, at low or half tide, there are always several coasting vessels lying high and dry, their masts at all angles; and by watching one's opportunity, splendid pictures can be made.

Three miles along the coast road to Lynton lies a small but sheltered natural harbour (Watermouth), and a good photo can be obtained when a small vessel is discharging. Here also are some very fine caves; two of them make good pictures, taken from within, with the distant coast seen through the opening. The coast and rocks at this spot are wild and rugged in the extreme and well broken up, a dreadful place for a vessel to be wrecked upon.

Two and a half miles in the opposite direction is the small village of Lee, situated upon the shore at the end of a thickly wooded and beautiful valley, with some old-fashioned thatched cottages and a picturesque post-office. The walk either by the road or coast is most enjoyable, especially the latter, which passes through the Torrs Walks, cut along the bare rocks and zigzagging up the cliffs and over the Torrs hills, from the summit of which splendid views can be had over the surrounding country and sea.

Berry Harbour is a small village about four miles distant, with most lovely surroundings and having quaint cottages and a very old and interesting church.

Chambercombe (one and a half miles) has a very old farmhouse, and the woods beyond give some good subjects with careful selecting.

Another short walk is through the Quay Fields above the harbour, past Rapparee Cove and up Hillsborough; several good bits can be had all the way. The best general view to be had of the town is from this route, taken when ascending Hillsborough, about half way up, and embracing the bathing cove, the entire harbour, Lantern and Capston hills, and the Torrs in the extreme distance. This requires to be taken before 10 o'clock in the morning to secure the best lighting.

For longer and more distant excursions there is plenty of choice, either by steamer, rail, or coach; the two favourite being Clovelly and Lynmouth. The former is one of the most picturesque nooks in Devonshire, if not in all England, and should on no account be missed. It can be reached either by rail to Bideford and then by a most enjoyable drive, or by water, steamers going almost every day in summer. This route gives the best opportunity for viewing the wild grandeur of the coast scenery between Ilfracombe and Mortehoc, and also the fine expanse of sand at Woolacombe, with a distant glimpse of Appledore and Westward Ho! Clovelly is a quaint fishing village, with abundant work for the camera, and consists mainly of one long street winding up the hillside to the summit of the hill. The street consists of broad steps paved with stones and the roof of one cottage is often almost on the level with the ground floor of the adjoining one above. The cottages are mostly covered with a mass of ivy or virginian creeper, and fuschias abound everywhere. Arrived at the top, the entrance to the Hobby Drive is seen, which is a road cut round a thickly wooded hill abounding with ferns and mosses, rustic bridges over picturesque streams, and with beauties at every turn, amidst which the camera man can revel for a long time. Lynton and Lynmouth are in the opposite direction, further up channel, and can be reached either by steamer or coach; the country round has been called a "diminutive Switzerland" and it is difficult to imagine a more beautiful spot; its praises have been sung and described so often that I need not repeat them.

Several good photographs can be had about the shore; the old and picturesque lighthouse lending itself admirably, with the boats discharging in the small stream when the tide is down. The chief attraction, however, is up the river East Lynn, and here for about four miles the amateur can use as many plates as he likes, the path by the river revealing new beauties at every turn. About half way (two miles) lies the chief centre of interest, viz., Watersmeet, where the two streams unite, each being crossed by rustic wooden bridges.

Scenery of a very different kind is to be had on the top of the hill at Lynton, and the Valley of Rocks; here the rocks assume all kinds of fantastic shapes. One in particular, called the Castle Rock, is a huge boulder upon the summit of a small mountain of smaller rocks piled on each other in all directions. The whole valley is very weird and grand. Best time for photographing here is in early morning, before breakfast.

Apparatus.

TYRER'S PATENT POSTAL TUBE.

THE "Government" Postal Tube Company, of 70, Long Lane, Bermondsey, S.E., have sent us a sample of the above, which we can heartily recommend to all who wish to send unmounted prints, reproductions, etc., by post. Those who have to get the contents out of an ordinary postal tube know what a difficult matter it is sometimes, but this new tube has a small piece cut out of one side so that the finger or thumb may be able to grasp the contents and easily withdraw the same.

BLAIR'S FILMS.

The European Blair Camera Company, Limited, of 9, Southampton Street, High Holborn, W.C., as we mentioned in our last, gave us a roll of film to test. The rolls will fit any camera roll-holder, and we have used our roll in an old roll-holder which we had by us. The emulsion is coated on the matt surface of the celluloid film, and by this means any tendency to frilling or blistering is entirely obviated. We have obtained soft, delicate negatives with all the newer developers, and also with eikonogen, as suggested by the makers. There is no tendency to hardness and lack of detail in the shadows, and we have found the emulsion as sensitive as we could wish, and by no means wanting in this respect. The following are directions issued by the makers :—

Any good developer can be used. For those who wish to make up their own developer the following eikonogen formula is given.

Formula.—SOLUTION No. 1. Distilled water, 40 oz.; eikonogen, 1 oz.; sulphite soda (crys.), 3 oz.

SOLUTION No. 2. Distilled water, 40 oz.; sulphite soda (crys.), 2 oz.; carbonate soda, 4 oz.

For use, take equal parts of each to make a quantity sufficient to cover the films to be developed. Where the image shows lack of contrast, increase quantity of No 1. To gain detail increase quantity No. 2.

As soon as developed rinse slightly and transfer to the fixing-bath: Water, 1 gallon; hypo, 3 lb.; sulphite soda (crys.), 2 oz.; tartaric acid, 1 oz.

With this fixing bath no alum will be found necessary, and the solution will remain clear for a long time. After fixing *wash thoroughly*; then immerse for fifteen or twenty minutes in the soaking solution, consisting of alcohol, 4 oz.; water, 16 oz.; glycerine, ½ oz. Removing from the soaking solution, pin up each film by the corners to dry spontaneously. Do not rinse the negative after removing from soaking solution.

An excellent way to dry these negatives is to pin them by two corners to the edge of a shelf, and attach to the lower corners by pins a light strip of wood, or pin them by the corners to a board.

Any tear drops of the soaking solution should be removed with a piece of blotting paper or absorbent cotton. When the negative is thoroughly dry, wipe off the back with a soft cloth.

The object of the soaking solution is to prevent the film from curling when dry.

The prices are, 25 quarter-plate, 5s. 6d.; 25 5 by 4, 7s. 6d., etc.

WHEELER'S MANCUNIUM MOUNTS.

George Wheeler and Co., of 46, King Street West, Manchester, have sent us samples of the above mounts, which are specially designed for use with gelatino-chloride prints.

The prints are slipped in the mounts at the top edge, and kept flat in position, and all the finish, whether matt or glazed, is preserved. The material of which the mount is made is white English cartridge, with a rough surface, and a neat double thin line runs round the opening, which adds considerably to the neat, artistic effect, in that it is free from any florid corners.

These mounts are neat, artistic, and good quality, and by no means excessive in price; they are sold in packets of fifty at the following rates:—Quarter-plate, 5s.; 5 by 4, 6s. 6d.; and half-plate, 8s. per 100; and the surface is so hard that they will bear cleaning when soiled.

THE "ADAMS" CHANGING BOX.

Adams and Co., of 81, Aldersgate Street, and 26, Charing Cross Road, W.C., have submitted for notice the latest form of the above, which contains some very good improvements.

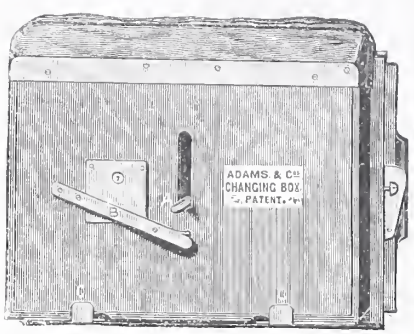


FIG. 1.

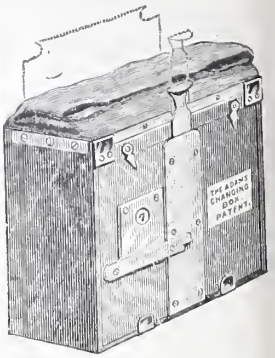


FIG. 2.

It is now adapted *to the same register as ordinary dark slides*, and may, therefore, be fitted to all field cameras, this form being shown in fig. 1 without any necessity for a loose focussing screen. Fig. 2 shows the form for hand-cameras, which has a register of 9-16ths, and is used with a separate focussing screen, though the same form may be supplied so as to be interchangeable with dark slides of the ordinary register.

This changing box will take either twelve plates or twenty-four cut films, and either all plates or all films, or a mixture of each may be used, special sheaths being provided for cut films. The method of changing is by lifting the lever at the back of the box, which raises the front film or plate into the special shaped bag, when it can be taken hold of by the fingers and inserted in the back of the box. The carriers are so constructed that the sensitive surface itself is actually in contact with the register, so that no matter how thick the film or plate it is always true in register. Each change of plate or film is indicated by a small number, which is seen at the back in fig. 1, and when twelve plates have been exposed the automatic stop B comes into play, thus preventing double exposures. When using the box for twenty-four films, after the twelfth exposure the stop B is merely lifted, and the indicator again records the exposures. The difficulty of allowing for the difference in thickness of the plates and films in sheaths is met by providing a small catch on either side, which has to be turned down when using it for films.

This changing-box is well made, and answers perfectly, and it is a decided blow to the use of dark slides. Prices for field cameras, quarter-plate, 50s.; half-plate, 70s.; whole-plate, 80s., carriers extra. Aluminium carriers may also be obtained, and by having these there is a considerable saving of weight, amounting to 9 ounces in the 5 by 4 size.

Reviews.

Das Atelier und Laboratorium des Photographen. By Dr. J. M. Eder. Published by Wilhelm Knapp, Halle-a-S.

Like all Dr. Eder's works, this is compiled with a thoroughness and completeness which places it far above any work of the kind. Treating as it does of studios, dark-room, printing, and retouching, it forms a welcome companion to the more scientific parts of Eder's well-known handbook.

After a brief consideration of portraiture in the open-air and in ordinary sitting-rooms, we have all the leading types of studio construction described, and in many cases figured. The printing room then comes in for consideration, and then backgrounds and accessories. The chapter on the dark-room and

its illumination is the best we have yet seen; almost every possible medium is considered. Portable dark-rooms and changing tents are also considered, and with the illustrations so lavishly scattered throughout the work, the book will be welcomed by all German-reading photographers.

The Art of Projection and Complete Magic-Lantern Manual. By an Expert. Published by E. A. Beckett, 111, Kingsland Road, N.E.

That we have here a book written by one well acquainted with his subject is manifest to anyone on reading the same, therefore we have no hesitation in saying that the information may be relied upon. At the same time, however, one cannot help wishing that the author was not quite such a master of his subject, and he would then have been able to appreciate better those little difficulties which a beginner gets into. For instance, assuming an ignorance which we do not possess, but which plenty of beginners do, we want to know how to mark slides, and the information, so far as we could find, is not to be found. Then again, in enlarging, we find no instructions as to which way the negative has to be put. Despite these little omissions, the book is thoroughly practical and thoroughly reliable.

There is a brief note on the history of the introduction. The principal forms of lanterns, with oil illuminants, the best form of jets, dissolving, etc., are treated of. We believe for the first time complete directions for the use of triple lanterns and obtaining effects are here published in full. Saturators, screens, tripods, and reading desks, and microscopical, electrical, and chemical experiments, combined with the directions for enlarging, slide-making, slide painting, complete a work which should be in every lanternist's library, and from which much useful matter may be learnt.

Societies' Notes.

The Hackney Photographic Society's annual exhibition will be held at the Morley Hall, Triangle, Mare Street, Hackney, on Tuesday, Wednesday, and Thursday, October 17th, 18th, and 19th, and will be opened on October 17th, at 7.30, the succeeding days at 12 noon, till 10 p.m. The prices of admission each day will be 1s. inclusive, and arrangements will also be made for continued instrumental concerts of a high-class character, lantern displays, etc. *Classes*.—Members' Work: Class A, for any picture not previously exhibited for competition; B, for best picture taken in hand-camera (enlargement permitted); C, for any picture taken at a club outing *since* the last exhibition; D, for set of six slides (not previously exhibited), still life excluded. In Classes A, B, and C a gold championship medal will be given for the best picture, by the President, Mr. F. Houghton. Open Classes (entries in these classes may be priced for sale at the option of the exhibitor): Class E, for any picture not previously having received an award; F, for portraiture and genre (professional class—no restriction); G, for pictures which have previously received awards; H, for six lantern slides not having previously received award. *Awards*.—Class A, three silver and silver medal (superior) President's prize; Classes B, C, D, silver and bronze medals in each; Class E (open), silver and bronze medals; Classes F and H, silver and bronze medals in each; Class G, gold and silver medals; Apparatus, silver medal for most interesting exhibit. Extra entry forms and all further information respecting exhibition, can be obtained from W. Fenton-Jones, Hon. Sec., 12, King Edward Road, Hackney, N.E. *Apparatus*.—While offering every facility for the exhibition of apparatus by the trade, the Committee will welcome any novel appliance made by members and amateurs generally. Exhibit of apparatus will be free on condition exhibitor advertises in the exhibition catalogue. Terms can be obtained of Hon. Sec. A silver medal will be awarded for most interesting exhibit. *Pictures for Sale*.—Exhibitors in the Open Classes may state the prices of their pictures or signed duplicates if for sale, framed or unframed, as frequent enquiries are made. A priced catalogue will be kept of same by the Secretary, to whom all applications should be made. 10 per cent. commission will be charged on sales effected. *Removal of Exhibits*.—Exhibits received in packing cases will be repacked and despatched directly after the close of the exhibition. Exhibits left by hand must be fetched away on Friday, the 20th of October, between the hours of 10 and 4 only. An experienced packer will be employed, but the Committee do not hold themselves responsible for any damage that may happen to the exhibits whilst in their custody, and every precaution will be taken to ensure their safety and prompt return. The exhibits will be insured (collectively) against fire. *Regulations*.—All pictures must be mounted and framed. The Committee prefers all pictures to be mounted separately, as each picture will be judged by itself, and not as one of a set. The medals being given for *single* pictures (except in Class D and H). Full particulars must be given on entry form, for catalogue. A label must be attached to back of each picture, bearing the title, the class for which it is entered, and name of exhibitor. The entrance fee of 2s. 6d. entitles a member to enter in any or all classes. The entrance fee for non-members will be 2s. 6d. to each class. Entry forms must be sent to the Secretary, Mr. W. Fenton-Jones, 12, King Edward Road, accompanied by the proper remittance, on or before Sept. 30th, when a number (which appears on receipt for entrance fee) will be assigned to the exhibitor. All exhibits must be delivered free of cost to the Hon. Sec., at Morley Hall, Triangle, Mare Street, Hackney, on Saturday, 14th October. The Hanging Committee has been chosen with strict regard to impartiality, and will have absolute power to reject any picture or a series of pictures at their discretion. The Committee will be very pleased to receive pictures, not for competition, for exhibition. No charge for entrance would be made. All work, except framing, must be done by exhibitor. No exhibitor to take more than one medal in any one class, and no picture can take an award in more than one class. No prize picture can compete except in Class G. Photographs may be by any process. In members' classes, winning pictures to become the property of the society. The judges shall have power to give or withhold any award, and their opinion shall be final. Hand-camera Class: The accepted meaning of the word shall be a camera held in the hand without other support than that of the body.

The following gentlemen have kindly consented to act as judges at the photographic section of the Stanley Show:—J. Traill Taylor, Henry Sturmey, and E. J. Wall.

Societies' Meetings.

Beverley.—The sixth excursion of the season took place on the 13th inst. to Everingham Park, by permission of Lord Herries. The name Everingham is supposed to be derived from St. Everildis, who founded a religious house in the locality about the year 650, and centuries ago it was known as Everildisham. The family name of the Lord Herries is Maxwell, a distinguished Scotch family, and lineal descendants of the Constables of Flamborough. They became possessed of the manor in 1510, and at the present time the estate comprises the entire extent of land in the neighbourhood, with the exception of the glebe. The park is a large and picturesque one of 175 acres, well timbered, and stocked with numerous deer, and containing a fine lake of eight acres, the scenery at this point being very romantic. The mansion is a spacious building of red brick, with stone dressings. Adjoining is the chapel erected in 1839, after the classical order, by the late Lord Herries. On the exterior is the following inscription—"B. Mariæ Dei Gen. Imm. Con. et S. Everildæ." The ceiling, which is truly a work of art, is supported by Corinthian columns, between which are statues of the twelve apostles, life-size, said to be copies of those at Rome. The high altar is of Italian marble. The lady chapel is rich in colour and precious stones. The party then inspected the pleasure grounds, gardens, hot-houses, and groups were arranged on the lawn with statuary, etc., for the background, many photographs in all being taken. The village church is situated near the high road, and is dedicated to St. Everilda. It consists of nave, apsidal chancel, and tower containing three bells. The register dates from 1634. The nave was rebuilt somewhere about the year 1690, and in 1871 a thorough restoration of the roof took place, which was raised, and new windows inserted. The east window is of stained glass.

East London.—General meeting held on 12th inst. Mr. E. Stone occupied the chair. Mr. Aldridge showed two whole-plate negatives, one an Imperial plate and one a Barnet, both of good quality. Prints shown by Mr. G. E. Bennett, and also some lantern slides. The date for sending in prints for the forthcoming exhibition was extended from October 10th to the 20th, for members' classes only. Mr. Wilkinson showed a very neat method of mounting P.O.P. which is, to take the print from the water, lay it face downwards upon a sheet of glass, remove the surplus water with a piece of blotting paper, then apply the mountant (starch preferred), and place upon the mount. This, he said, gave a very nice finish to the picture. The Hon. Secretary announced that at the next meeting

September 26th, Mr. S. H. Fry would give a demonstration upon "Sandell Plates."

Gosport.—Meeting on September 13th. The Rev. L. J. Matthews, C.F., President, occupied the chair, and there was a good attendance. The evening was devoted to the selection of slides for entry in the forthcoming National Lantern Slide Competition.

Leeds.—A successful meeting of the Leeds Camera Club was held on the 13th inst., for the adoption of rules and election of officers, Mr. Vevers in the chair. The following were the officers for the first year of the club. It was resolved that Dr. Thresh be asked to accept the Presidency. Mr. W. R. Irwin was unanimously elected Vice-President, and Mr. Chas. B. Hutchinson and Mr. T. R. Thompson respectively Secretary and Treasurer. Eight were nominated for the Committee, the following five being elected—Mr. C. C. Vevers, Mr. H. Eastwood, Mr. P. Little, Mr. Wilson, Mr. J. W. Westmorland. The next general meeting will be held in the same rooms on Wednesday, September 27th, at eight o'clock, the chief business being the engagement of rooms for the winter.

Hackney.—Ordinary meeting 14th inst., Mr. J. O. Grant in the chair. Messrs. Dean, Fort, Moore, Roberts, and Roofe showed work. From the question box. In taking photograph of factory, with men at work, what kind of plate should be used? Summarising the replies, backed and very rapid plate advised. Mr. Beckett had tried Powell's backing, and would expect it to answer for all ordinary cases. Mr. Sodean said when caramel is slow in drying he would advise applying a piece of slightly greased paper to the back of the plate before applying the backing. The Hon. Secretary showed one of Dyson's vignette backgrounds. Considering the price it was thought wonderfully cheap. Mr. Barker showed a platinotype print, much marked. The paper appeared at fault. Mr. Fort showed a negative having a mottled sky. It was thought irregular drying was the cause. Mr. F. W. Dodd showed a negative having marks on. The Hon. Secretary thought negative had been rubbed whilst wet. Mr. Gosling showed negative which, by retouching, had been cured of line-markings. Mr. Dean showed a negative with silver stains. Methylated spirits was advised being used. Mr Hudson handed up some negatives on which he failed to secur proper density. Mr. Beckett said they were much under-exposed.

To Correspondents.

All communications for these columns are to be addressed to **The Editor "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.**

QUERIES.

6161. **Stains.**—Can anyone kindly tell me the best way to get a stain out of a negative caused with Eastman's Solio paper, the result of leaving printing-frame out in rain?—CHARLES FRED.

QUERIES UNANSWERED.

Aug. 25.—Nos. 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

F. E. BIRCH.—There is not much, if any, advantage in a four-wicked lamp, and if the lamp be properly placed with regard to the condenser you will get no central shadows from the air spaces between flames.

A. C.—There is not the slightest difficulty in jumping to the conclusion that the intermediate marks are intermediate fractions, which we read as follows: ·05, ·06, ·07, ·08, ·09, ·1, ·12, ·14, ·16, ·18, ·2, ·22, ·24, ·26, ·28, ·3, ·35, ·4, ·45, ·5, ·55, ·6, ·65, ·7, ·75, ·8, ·85, ·9, ·95, 1·0. You can easily convert these into vulgar fractions by the aid of a little arithmetic. So far we believe that only Marion and Co., Cadett and Neall, Paget and Imperial Plate Co. use H. and D. numbers, but if you obtain from R. Field and Co., Suffolk Street, Birmingham, the relative speed list as compiled for the Watkins exposure meter you will find the speed of all commercial plates, which numbers divided by 1½ will give you approximately the H. and D. numbers.

C. W. F.—The small bright specks are due to minute bubbles of air enclosed amongst the rough points of the glass. You would find it much easier to use matt celluloid, but if you want to adhere to ground-glass, oil it with almond or sweet oil, then just remove excess of oil, place the ground-glass in water, then the print, bring the two into contact under water and raise out together, squeegee vigorously, and then set up to dry. Both prints are slightly over-printed and the hotel over-toned, but otherwise show careful work.

J. CLARKE.—We have sent your letter on to the secretary of the society, and possibly you may hear something, though we fancy it has been for some time disbanded.

R. H. M.—Many thanks, we will utilise soon.

A. FOLKARDE.—We will write you.

CHOKER.—Speaking from memory, we think that a rough-surface paper was the most suitable for your print; with regard to the sky, have you not yet learnt that nature does not always provide a suitable sky at the time of exposure? Is it always the case that an artist paints in the sky he sees when he paints in a landscape? If you think that the sky which appears at the time you take the view is the most suitable you have much to learn. You ask us to send you entry forms, but we know not either your name or address.

TOKO.—Scott's, sold by Chadwick, 2, St. Mary Street, Manchester.

W. E. C. WHITE.—The next Architectural Competition is for lantern-slides, next year, date not decided yet. See Exhibition list for dates of all forthcoming exhibitions.

PETER DEAN.—We are very sorry, but are afraid you must look on your negatives as beyond repair. The only thing we can suggest is to paste tissue paper on the back of the negatives, and then with stump and crayon try and even out the drying marks.

H. G. M.—"A. Brooker" and others who ask about our Lantern-slide Competition are requested to see note in "Our Views."

M. SHERWILL.—We have no instructions for making a portable lawn studio, but it would not be a difficult matter to make. If you obtain an ordinary background and mount it on wheels, and then provide it with top and side wings, we will, if you like, write and give you a description how to do it.

NEMO.—The best handbook on practical photography is Hodge's "Elementary Photography," price 1s., published by Hazell, Watson, and Viney, Ld., 1, Creed Lane, E.C.

W. H. P.—A single achromatic lens is suitable for half-plate work, and you can find the focal length by the process given in answer 5,147 last week.

VIATOR.—Metol can be used for rational development, and the best way would be to reduce the metol to one quarter of the normal, and use normal potash solution, then when the image is all out increase the quantity of metol to double the normal, and add some citrate of potash and a little, about 10 drops, 10 per cent. solution of acetic acid. We prefer, however, for under-exposed negatives, to use amidol in 1 per cent. solution with 4 per cent. solution of sulphite, and as soon as all the image is out not try for density, but fix and then intensify.

A. P. O BRIEN.—We have some articles in preparation which will probably tell you more, but magnesium was first used in 1859 by Bunsen and Roscoe for photo-chemical experiments. About the same time Crookes took a portrait of Faraday with magnesium, and in 1864 Brothers, of Manchester, used it for portraiture, and Maddox in the same year for photomicrography. Piazzi Smyth in 1865 photographed the interior of the Pyramids with it, and from that time its use has continued to increase.

NEPTUNE has varnished a negative so that it shows streaks and lines, and wishes to know how to remove the same. Soaking the negative in successive portions of methylated spirit and rubbing with a pad of cotton wool will soon remove most varnishes, but if they withstand this, try the addition of a little caustic ammonia to the spirit.

C. F. GRUNDY has spoilt a negative of which he has only one print on Solio paper, and wants to know how to make a negative from it. Place the print in a printing frame and then put on it a slow dry plate, give about 10 sec. three feet from a small gas flame and develop as usual. It would also be possible and a preferable plan to copy the print in the camera. In this case no grain of the paper shows, whereas it does when making a negative by contact.

EOS.—We cannot trace any previous letters from you, but, anyway, your print would be admissable. (1) The best mounts and tints for matt-surface chloride prints can only be determined by examination of the prints themselves, but a rough Whatman mount with pale India tint and plate sunk will suit most things. In our opinion there is nothing to beat a plain or reeded oak frame with a narrow gold fillet. (2) We should use the above-mentioned mounts for platinums. (3) Sello, 73, Finsbury Pavement, E.C., or W. F. Slater, 169, Southampton Street, Camberwell, S.E. (4) The rapidities are, we believe—Marion's, 40 Edwards', 35; Barnet, 60; Sandell, 60; Ilford, 35. (5) Yes. We have only three lantern-slide competitions this year now, and, in capable hands, a hand-camera may turn out a picture. We do not quite agree with your sweeping assertion that it is for lazy photographers only; some peashooters we know are fearfully energetic—too much so. However, we will see what we can do to satisfy you next year.

STROMA.—If you are prepared to spend £8 we should say that a No. 3 Goerz Doppel Anastigmat Series III., of 8½ in. focus, which will cover a half-plate sharply at full aperture, *f*/7, would be the one for you to get. You will see advertisement in last issue.

G. P.—We should say that the yellow stains were caused by insufficient fixing and insufficient or else too long washing. The former is certainly one of the causes, but you give such meagre data that we can hardly state definitely. Such stains may be caused by the fixing bath becoming acid, or by not washing the prints quick enough prior to toning.

M. HOWATSON asks which is the best paper for amateurs to use, as gelatino-chloride paper fades. We can only state that properly treated gelatino-chloride paper is as permanent as any silver printing-out paper, and there is no best paper. Each negative may, as a rule, be said to require one particular paper to get the best effects, but for general all-round work we should recommend gelatino-chloride, but if this correspondent will send us, say, one dozen negatives numbered we will try and suggest the best paper for each.

R. H. M.—We will return films; our experiments are progressing slowly just now, because we have too much other work in hand, but we hope to complete in a month.

F. M. (Hassocks).—Many thanks; we will write you.

ONE IN TROUBLE mixes his oxalate in all manner of ways and always gets it creamy, and wants to know why. If the precipitate caused on addition of the iron is white it points to common water having been used for the iron solution. If he will make the solution as follows, he ought to obtain brilliant clear orange red solutions:—

I.		
Neutral oxalate potash		1 oz.
Distilled water		4 ,,
Sulphuric acid		4 drops.
II.		
Iron sulphate		1 oz.
Distilled water		3 ,,
Sulphuric acid		4 drops.

If he will make up above solutions and try, and then fails, being careful to add the iron to the oxalate, he had better send us up some of the solid salts to try for ourselves.

E. HOWELL.—You do not state whether you want 50 or 100 for show, or merely some good ones to test the quality of your own. Please let us know.

DETAIL has some slightly under-exposed glen scenes, and asks which is the best developer under such circumstances. We should use

Amidol		5 gr.
Sodium sulphite		50 ,,
Water		1 oz.

and as soon as the whole of the detail was out and distinct, wash and fix and then intensify.

H. STUART, in enlarging, is much troubled with a ring of orange light surrounding his disc. This only shows itself when an RR or a portrait lens stopped down is used. The best way to get over this difficulty is to place some slide or negative in position, focus as sharply as possible, and then remove the same and withdraw or push the light nearer the condensers, the latter most probably.

A DISTRESSED ONE asks how spots on a negative caused by being left out in the rain in contact with silver paper can be removed. Silver stains are extremely difficult to remove; in fact, we may say that there is really no satisfactory plan. Rubbing with methylated spirit, the application of a weak solution of cyanide of potash have been recommended, but there is really no safe cure. Everything suggested will affect the image more or less. We have some experiments in hand which we hope will result in something satisfactory.

H. HANNANT.—Technically your print is good but it would have been far better to have gone further back and taken in more, now the whole thing looks confined and cramped, and the bough of the tree has no support and has become the principal object.

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices . 1, Creed Lane, Ludgate Hill, London, E.C.

No. 469. Vol. XVIII.] FRIDAY, SEPTEMBER 29, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

Our Views.—The Pall Mall Exhibition—Weeding Out—The Judging—Improvements—Taylor, Taylor and Hobson's Competition—Winter Work—Photographic Instruction—Our Prize Slides—Our Next Issue—An Explanation—A New Optical Device—Its Value.
Flotsam and Jetsam, by Anchorite.
Letters.—Blair's Films (Plomo Dulce)—An Explanation (Howson)—North Wales (R. C. L.)—Anastigmatic Lenses and Colour Screens (Pearson).
Articles.—Pictorial Photography (Wall)—To the World's Fair.
Holiday Resorts.—West Sussex—Durham Revisited—Swanage—Three Weeks in the Netherlands.
Exhibitions.—P. S. G. B.—Royal Cornwall Society.
Societies' Notes.
Societies' Meetings.—Brixton—Newcastle—Birmingham—Fairfield—North Middlesex—North London—South London—Wigan.

Editorial Department—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

Terms of Subscription—

United Kingdom.....	Six Months,	5s. 6d.....	Twelve Months,	10s. 10d.	
Postal Union	,, ,,	6s. 6d.....	,, ,,	13s. 0d.	
Out of Postal Union ..	,, ,,	7s. 9d.....	,, ,,	15s. 3d.	

Trade Advertisements *are received up to Tuesday morning.*

Publishing Department.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition.—*Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

The Annual Lantern-Slide Competition closes September 30th.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

"Well, what do you think of the general effect?" was the question asked us on our being the first visitors to enter the Pall Mall show on Saturday morning, the 23rd inst., which, as usual, was devoted to members of the Press. "Good, decidedly good," was our answer, and this, we think, will be the verdict of all who can see the room so as to take in its general effect. By using a sort of dado the Hanging Committee have made a line, and one is thus not compelled to break one's back to see anything very low down, and they have also certainly not skied so many pictures this year.

A closer examination proves that there are by no means so many exhibits as last year, when there were 648, exclusive of apparatus; this year there are only 352. A ruthless selection and weeding out of bad work was the order of the day, and we hear that over 500 pictures were rejected. This should, of course, result in the remaining work being of higher quality, and we think that, taking it on the whole, the P. S. G. B. may congratulate itself on there being very little bad work indeed.

In fact, we might say that the only bad work in the Exhibition has been medalled. We are the last to cavil, as a rule, at judges' awards, and certainly the board of judges at Pall Mall ought to be sufficiently strong to make one rather hesitate to so boldly express the opinion that really bad work has been medalled; but we are compelled to say this, and we cannot understand how it has happened. We do not mean to infer that all the medalled pictures are bad, but certainly the judging has been wild.

The apparatus exhibited is considerably less than last year, and this is also due to a wise decision of the Exhibition Committee, and that was that only apparatus which has distinct claims to novelty in some shape or form should be admitted. The screens are entirely done away with, and the lantern rostrum has been moved right to the end of the room, so that there is far more space for walking about, a pleasant and noticeable fact at the conversazione on Saturday evening, and this will give far more room at the lantern exhibitions.

Messrs. Taylor, Taylor, and Hobson are offering a prize of ten guineas in cash for the best negative taken with one of their lenses, and offered for competition before the end of October. Under "Societies' Notes" we print the conditions of this competition in full. Last year the prize was won by a capital little interior of "A Highland Cottage Home," taken with a hand-camera.

DURING the winter months photographic societies generally get into full swing, and members who have been during the summer scattered abroad obtaining negatives, now show up in far stronger numbers. Winter is essentially a time for indoor work; one naturally looks through one's negatives obtained in the holidays and ponders on the failures, and makes good resolutions to do better in the future.

THE winter is also essentially the time for picking up new scraps of technical knowledge, reading new books, and trying new dodges. The People's Palace in Mile End Road, E., offers now a course of lessons on photography, commencing Thursday, September 28th, and for those who desire a little systematic and practical efficient help, the winter course is very valuable. Both elementary and advanced practical and theoretical photography is taught, and the more difficult branches of photo-mechanical work. The classes are under the superintendence of Mr. C. W. Gamble, with Messrs. Redmond Barrett and Newton.

WHAT the People's Palace offer for the East-end, and the Birkbeck in the City, the Polytechnic in Regent Street offers for the West End. There under the direction of Mr. Howard Farmer, a trained staff of teachers also is prepared to hold classes in every department of photography.

CONSIDERING the low fees which are charged at these schools, they should be well patronised, and as we are often asked where efficient instruction, both class and private, may be obtained, we can recommend application for prospectuses.

WE would inform all the secretaries of societies who may have applied for the loan of our Prize Slides, that we hope to settle the itinerary this week, and they will see in our next week's issue a list of the dates fixed.

WE would again remind our readers that with the next issue we commence the translation of Eder's "Handbook," and ask those who wish to secure copies of the paper to order in advance, that we may not disappoint them.

WE think that next week's issue will be certainly well worth purchasing, for, besides the above-mentioned article, it will contain six or seven illustrations, our usual summary "The Month," the first number of our winter supplement, "Our Lantern Screen," the commencement of a series of leading articles on "Photography with Magnesium Light," "The A B C of the Lantern," etc. So we ask those who do not wish to get left to send their orders on at once.

ONE correspondent writes us to the following effect:—"I cannot understand how it is that you can commence the translation of so important a work as Eder's 'Handbook' in the middle. Why begin at the third and not the first volume?" Well, the fact of the matter is that the first volume of Eder's monumental work is confined to historical notes, photographic chemistry, photography by artificial light, the lens, the camera, and instantaneous apparatus, with a supplementary volume on the dark-room and laboratory. The second volume treats of the collodion and daguerreotype and the older negative processes. As these two volumes comprise about 5,000 pages, it would be no mean task to translate them, though we should not shrink from it; but it seemed better to us to undertake the publication of the third volume, which treats of the processes which are in every-day use by so many photographers, and *which must be of value to every one of our readers, whether tyro or expert,* rather than to publish the earlier volumes, which have very great value, but mainly to the more advanced of photographers, and only indirectly a bearing on every-day practice and work.

FURTHER than that, the third volume is quite distinct in itself, and possibly it will not be the only one we shall attempt, but this remains to be seen. There are always several classes to cater for—the scientific, the artistic, the beginner, and the expert, and to fill the paper with purely scientific matter, which it would be necessary to do in order to complete the translation within the life of a reader, would be too much even if the work of the translator were not considered.

TRULY we are in the thick of the exhibitions. This week we publish elsewhere the prizes and conditions of the South London Photographic Society. The Stanley Show and Hackney both promise well, and, with the other exhibitions, it means that there is considerable hard work in store for the conscientious man who goes, or has to go, to every exhibition.

AT Pall Mall Messrs. R. and J. Beck are showing the No. 2 quarter-plate Frena, which we briefly describe elsewhere. But the point to which we wish to draw particular attention is the device they have adopted for focussing. As is well known, the Frena has what is called a fixed focus, that is, there is a fixed distance between the lens and sensitive surface, which gives objects beyond a certain distance sharply defined. But whereas many would wish to take things nearer, and to do this one has to lengthen the focus, it was found that this would entail greater cost and a heavier and more bulky camera. So what do they do? They ingeniously shorten the focus by placing in front of the lens a supplementary single lens of such a power that it will so shorten the otherwise lengthened focus for near objects.

THE value of this device cannot be over-estimated, and it certainly marks a new era in fixed-focus camera construction. By the aid of these supplementary lenses without sensibly spoiling the definition by altering the corrections of the lens, it is possible to obtain sharp images of objects from 3ft. to infinity with precisely the same focus.

IT will probably, of course, be pointed out that this is not new, but actually it is new in its application to hand-cameras. Sutton used a supplementary lens close to the plane of the diaphragm, so as to alter the focus of the original combination; and Traill Taylor, in his "Photographic Optics," gives a diagram of a somewhat similar device by means of which he could alter his focus. But with Messrs. Beck's arrangement it will be seen that what they do is to shorten the focus, which would otherwise be lengthened when focussing near objects, so as to keep the focus a constant fixed quantity.

Flotsam and Jetsam.

THERE have been many precious negatives, no doubt, since photography was first born, but it is a question whether any of them can vie with one possessed for a long time by the old photographer whom all visitors to Stonehenge will be sure to remember. The story appeared in the daily press a day or two ago.

IT seems that the photographer, who is also a kind of curator of the stones, was visited unawares, not by angels, but by some of the Royal Family. It is a democratic age, and yet the angels need no capitals, while the Royal Family must have them. The curator did not know his visitors, and so treated them as he did the scores of tourists who came to see his charge every day.

THE lady of the party, however, suggested that they should be photographed in a group, and it was afterwards discovered that "the lady" was no less a person than Queen Victoria

herself. This was years ago, but the photographor kept the negative, and, in his own words, "until by accident it was broken, it brought him in an annual revenue of £50." And yet, as we have said before, this is a democratic age!

Actum est de feriis! The holidays are now almost all over, and a hint that has reached us may well be taken to heart by the peripatetic amateurs who have trotted here and there about the country in all the pride of their new cameras. How many promises have been made to send off prints of various pictures taken during these travels? And how many of these promises will be performed?

Of course, we all know, and it is an easy thing to gaily say, when permission has been accorded to take some special bit, "I'll send you a print when I get back." But it is quite another thing, and far more difficult, to make good the lightly spoken words. Yet for the honour of photography it must be done.

Probably most amateurs, especially in their salad days, know what it is to make two exposures on one plate by some unaccountable accident. The man who performed this feat the other day was by no means an amateur, and by no means good at accidents, yet he accomplished a really funny performance that is too good to remain untold.

His identity shall not be revealed, though, if it were, there are not a few to whom it would be familiar. His first exposure was upon a church for the especial purpose of taking a very fine window. His second was at a group of rustics, and when the plate was developed the results were somewhat remarkable, especially if viewed with the aid of a little imagination.

Hob and Giles had somehow been canonised, and appeared dimly set in the stained-glass of the window, like rustic saints not fully fledged, their corduroys contrasting very oddly with one's ideas of what the garments of all well-conducted saints ought to be. The composite photographs of the Cabinet, which were so much spoken of a while back, were not in it with these anomalous figures.

Uncle Sam is really a very thorough sort of creature in many respects. He organised a census some time ago, and the bulletins are still being turned out from his census department, furnishing a fulness and minuteness of information about his children of all colours and kinds that we in the old country are quite strangers to.

In a bulletin just issued dealing with the Cherokees of North Carolina, he has called the camera to his aid. A number of reproductions of photographs, illustrating the appearance of the people and their daily life and occupations, is included in the report. Fancy that in a census bulletin!

Here is a puzzle which the *Sketch* has set its readers—not intentionally, of course, but no woman will be satisfied till she has tried this, the Sara Bernhardt recipe, as we may call it, for posing for a photograph. Says the *Sketch*, "Whether languishing on a couch, as Cleopatra, or merely sitting for head and shoulders in a modern gown, there is a relaxation of muscles and an absence of joints, a poise of the head or a droop of the arms that lends her an air of perfect ease."

Will some one try it, please—muscles all relaxed, joints all laid aside, arms drooped and head poised, and send us the result!

Anchorite.

Letters to the Editor.

BLAIR'S FILMS.

Sir,—I have read your remarks *re* Blair's films in the issue of September 22nd, but you do not say how you hold the films flat during the development. There are possibly other amateurs who have Blair's cameras, and who may, like myself, find great difficulty in developing, owing to the extreme "curliness" of these films.

I should very much like to see the results of your trials, as there can be no doubt that my treatment of the films in development is not the correct one.—Yours, etc., Plomo Dulce.

* * * *

AN EXPLANATION.

Sir,—May I ask you to find room for the following correspondence in your columns, in order that I may not have any credit which is not due to me.

My part consisted of enlarging to the special colour which I thought best suited to the subject, in inventing the title, and choosing the frame and method of mounting, thus making the exhibit a harmonious whole, my object being to enforce views which I have frequently expressed, as to the great necessity for adapting the colour, etc., of a print to the subject, and the advantages offered in this respect by Alpha paper.—Yours, etc.,

John Howson.

Camera Club, Charing Cross Road, W.C., 25th Sept., 1893.

[copy.]

"Telegram to Child Bayley, 50, Great Russell Street, W.C.

"Just discovered that I omitted to state in entry form that my Alpha enlargement was from a quarter-plate negative by Mr. Howell, of Barbadoes, and I hasten to disclaim any credit not due to me, in case it affects the award.—Howson."

[copy.]

"50, Great Russell Street, W.C., 25th Sept., 1893.

"Dear Sir,—In reply to your telegram, the omission from the entry form will not affect the award in any way.

"You might, of course, make the announcement through the press if you wish.—Yours faithfully,

"R. Child Bayley, Assistant Sec."

"J. Howson, Esq."

* * * *

NORTH WALES.

Sir,—I have lately returned from a visit to North Wales, stopping at Penmaenmawr, and as I have received useful information through your journal, think, perhaps, the following might be acceptable for the next issue of your Annual.

There is no photographic chemist in Penmaenmawr, but Mr. Hamilton Foyn (professional) sells plates, papers, etc., at a small profit, and allows use of dark-room to amateurs at 1s. per hour for developing, and 1s. 6d. chemicals included.

In Conway, Mr. Llewellyn Jones, chemist, stocks plates, etc., and I understood a dark-room was also available, but did not use it.—Yours, etc., R. C. L.

* * * *

ANASTIGMATIC LENSES AND COLOUR SCREENS.

Sir,—In the number for August 18th, you published a letter of mine on the use of colour screens with anastigmatic lenses, in which I stated that on using a pair of accurately matched anastigmats, working at *f*/7 in a stereoscopic camera, one with a colour screen and the other without, the unscreened half of the negative was quite sharp, and the screened one fuzzy and out of focus, the colour screen having apparently lengthened the focus of lens, which was restored by unscrewing the lens nearly two turns of the thread after focussing sharply on the ground-glass. As the lenses were made and matched specially by the eminent firm of Ross and Co., and the camera a high-class one, which I have used successfully for two years with rectilinears, I concluded the anastigmatic lens was affected optically by the colour screen.

However, when too late to prevent the insertion of my letter, I noticed something about the dark slide that had hitherto escaped attention. I had a dozen "Barnet" slides fitted last year for lightness, the fronts of which are cardboard, and I find on examination that they register deeper at one end than the other, but never having worked with larger apertures than *f*/11 or *f*/16, the difference was generally inappreciable.

I have now tested the thing in a perfectly reliable manner, by mounting one of the lenses in a quarter-plate camera, focussing on a ground-glass, held in the dark slide on a flat printed label, so close as to copy nearly full size, substituting then an isochromatic plate for the ground-glass, and exposing. Another plate was then exposed in same side of dark slide, after slipping a colour screen on to the back of lens, and on development the two negatives were absolutely sharp. A repetition of the experiment on a landscape subject was equally successful.—Yours, etc., A. A. Pearson.

Pictorial Photography; its Principles and Practice.

By A. H. WALL.

CHAPTER V.

UPON PHOTOGRAPHING SKY EFFECTS.

(Continued).

RESUMING our chat about that vaporous condition of atmosphere which Turner painted with such wonderful truthfulness and perfection, and which is so finely rendered in the more finished and expensive engravings made from his pictures, let us turn to one phase of it, that which even some of our cleverest artist-painters have admitted they could not quite successfully represent.

On a very hot sunny day, such as we have had in abundance during this summer, the air is perceptibly in motion, and objects seen through it have their outlines more or less blurred and indistinct where the light is strong, although they are clear and well-defined where the shadows fall. This phenomenon is full of beauty in nature. Turner showed that it could be imitated in a painting, and engravings from his works teli us that the appearances it gives can be preserved in black and white, or monochrome. Now is not this enough to inspire and encourage the photographic art student? To attempt great things and fail in achievement is not all loss, and you may succeed. At any rate, you will be stronger in knowledge, and more thoroughly observant after such attempts than you were before making them, and your gain will be greater and higher than it would be if by some mechanical accident you had been successful without seeking, appreciating, or even seeing the real beauty and superiority of your production. I have known hundreds of photographers who, on one of these hot days, would only photograph a landscape in its shadowy passages, because in the sun-lighted passages, objects wouldn't come out as they wanted them, clear, sharp, and distinct. The confounded lens would insist upon fidelity to nature, and this bothered them. They knew all about clearness, sharpness, and distinctness, they knew nothing about Nature's most admirable and picturesque effects of light and atmosphere. They sought not nature in one of her loveliest aspects, but clearness, sharpness, and distinctness. Here, too, the learner may find a lesson, and the more experienced discern suggestions.

"Everything," says a very talented landscape painter, J. B. Pyne, addressing a pupil—"everything which, even in the most remote sense, relates to LIGHT is of the greatest interest and utmost importance to a painter; therefore, under the barest chance of obtaining information, read anything which any one may write, and hear patiently anything which any one may have to say on so momentous a question; for it is this knowledge of light, or, in the present state of our information, the knowledge of its phenomena merely, that can give you any power over its imitation. It is the one thing only of which the palette is truly short, and its absence has been wailed over, and always will be, by thousands."

There are many other considerations which crop up in connection with Pictorial Composition and the subject of this chapter, to which artist-photographers would do well to give attention. Some of these I shall now venture to point out.

One of the great charms of sunlight in this slightly vaporous condition is a blotting out or subordinating of those too prominent yet petty details which in photographs so often attract the eye from things of far greater importance. If these impertinent details convey no ideas in harmony with your subject, and are quite valueless in a suggestive sense, appealing neither to sentiments, feelings, or fancy, their undue prominence is pictorially detrimental and offensive. Put them sternly back into their proper places, if you can, always; and sometimes a blaze of hot sunlit air will do this for you very effectually, making what might seem under other conditions a commonplace, barren subject one of great beauty and interest. The artist looks for these effects because he knows their pictorial value, the photographer too often never seeks and overlooks them because he does not. Hence that necessity for studying effects of light and air, in art and nature, which I am now striving to enforce. Go from your studies in the open air to the best works of our great landscape painters, and from them to nature, and practice with your camera will be far more loveable, delightful, and valuable than you ever found it before. It will employ your mind as well as your hands, store your memory with delightful reminiscenses of walks and drives, strengthen your imagination, deepen and extend your sympathies, give you pleasures which will be perhaps new and wholesomely refreshing, apart altogether from and yet part of the interest you have in your chemical, optical, and mechanical operations. It is intellectual work that gives sure delight and hurts not: mere mechanical work is, in comparison, but hurtful, slavish drudgery.

In writing as I have done in this chapter, I quite understand the great difficulties subjects of this kind present to the photographer, and if I had not seen in various parts of the world, especially in Australia, what triumphs have been occasionally achieved in representing sunlit air photographically, I too might smile and shake my incredulous head.

The great value of our best art exhibitions rests in the fact that they not only show us what we may attempt, but what we may achieve. I hope some day to see or hear of an exhibition of photographs in which nothing that is not a picture will find admission—an exhibition of art photographs without any admixture of work more exclusively technical, mechanical, or scientific. "As in the sister art, poetry" (says a modern painter, writing on this subject of art exhibitions), "the perusal of the immortal writings of the mighty dead has kindled in many a soul a flame which had else been unlit," so it is not unreasonable to conclude a just appreciation of the works of the great masters in art is extended by "the facilities which are now afforded to all classes for seeing and studying them."

Pictorial effects of another but very beautiful kind, which, of all others, the mere photographer most avoids, are those obtained when mists and vapours are rising from the earth and floating upward with various degree of transparency over the middle or extreme distance of a landscape, to melt into the atmosphere above. We then often see objects that are of deep interest and pictorial value standing boldly and prominently forward, although under any other atmospherical condition they retreat into very subordinate appearances; being dark, may be they are lost in the dark tones of their backgrounds; or having beautiful outlines, or gradations of tones, or outlines that help the composition, these are perhaps all broken into and rendered ineffective by objects which the rising vapour blots out or subordinates into quietude and indistinctness, substituting dark against light for dark against dark.

May I pause here and digress, by the bye, just to note that before the times of Claude Lorraine, the Poussins (Nicholas and Gasper), Cuyp (Turner's great forerunner and inspirer), Salvator Rosa, Rubens, Ruysdael, Hobbema, and some few others, landscape art was hardly known or appreciated, and had no great triumphs to record; but by the inspiration of their works this branch of the painter's art soon after advanced by leaps and bounds? It may be the same in photography when we devote to landscape as much artistic culture as we have so far mostly confined to figure and portrait photographs. So you, you, and you, my readers all, have the chance before you of becoming famous as reforming and advancing masters of your craft. Isn't that worth something? All the recent progress in technical appliances favour you. Study, practice, and perseverance will do the rest. Courage, young comrades! To arms! to arms!

"Landscape painting," says Alexander von Humboldt in that noble book, "Cosmos: Sketch of a Physical Description of the Universe" (which every one should read or have read)—"landscape painting and fresh, vivid descriptions of nature alike conduce to heighten the charm emanating from a study of the external world, which is shown us in all its diversity of form by both. As the riches of nature became more known and more carefully observed, the feeling of art was likewise able to extend itself over a greater diversity of objects; the relations between the inner tone of feelings and the delineation of external nature became more intimate, and by links thus established between the two, the gentle and mild expression of the beautiful in nature was elevated, and, as a consequence of this elevation, belief in the power of the external world over the emotions of the mind was simultaneously awakened. When this excitement, in conformity with the noble aim of all art, converts the actual into an ideal object of fancy, when it arouses within our minds a feeling of harmonious repose, the enjoyment is not unaccompanied by emotion, for the heart is touched whenever we look into the depths of nature or humanity." By the ideal Humboldt did not mean, as some do, the unreal, but the select.

Returning to our present subject, I would advise those photographers who think anything will do for "a sky," whether it be a negative taken apart from the landscape, or one "printed in" with the aid of cotton wool, or what not, that so surely as their landscape truthfully indicates its conditions of air and light, so surely does it indicate the sky and clouds which ought to belong to it. The harmonies of land and sky are essential to the full development of a picture's power. If in one picture they are found to be at loggerheads, that picture is artistically a ruined one; if it has no sky, that production is but the half of a picture, and the better the landscape represented the greater is the pity of such careless, foolish blunders.

Clouds are infinite in form and meaning: the light, transparent clouds which spread their lovely net-work over the bright blue heaven, or spread their tender greys and silvery brightness across it in parallel bands, speak of quiet, fine weather. To print such a sky above a landscape indicating the progress of a storm, would be a blunder in art, and utterly false to nature. So to print in from a negative of vast rolling cumulo-stratus clouds, gloomy in tones, and terribly threatening in their darkest masses, a sky above a landscape photograph taken under altogether different conditions, would simply be absurd; yet even this blunder has been perpetrated, and that too in a photograph which some years ago was exhibited and critically glorified, and carried away the highest award for ARTISTIC EXCELLENCE. Both pictures, sky and landscape, were very good; the blunder, a huge one artistically, was only in their combination. If the photographer had been a student of nature as well as a focusser and exposer, etc., he would never have perpetrated it; and if he had been an artist with an eye for sentiment and feeling in pictorial composition, he would, with equal promptitude, have declined to introduce, as one, contradictions so glaringly unnatural. In like way I have seen wind-clouds introduced above a landscape in which not a blade of grass was bending or a leaf trembling. If both sky and landscape had indicated wind, all the ideas associated therewith would have been present in the mind and imagination of the looker on, and the impression made would have been deep and lasting, the interest awakened, and the pleasure given been enhanced. But the sky being contradictory of the landscape, one destroyed the other, and both lost the powers they would on combination have exercised.

So you see composition means something more than merely putting one to two for making three, and we may know but little if with the practice we have not acquired the principles by which it is governed.

(*To be continued.*)

Photographic Society of Great Britain.

THE Exhibition of the parent society was opened at 5a, Pall Mall East, on Saturday last, the 23rd inst., with a conversazione, the guests being received by Captain Abney and the Council.

The judges for this year were F. Hollyer, P. H. Emerson, Colonel Gale, F. M. Sutcliffe, and J. B. B. Wellington, with Chapman Jones and A. Pringle as scientific experts, and the following pictures received medals:—

Nos. 3 and 72, "'Mongst Mines and Miners," by J. C. Burrow.
No. 18, "Study of a Child," W. A. Cadby.
30, "Un Harem en Deplacement," Emile Frechon.
40, "Omegna—Lake Orta," J. A. Sinclair.
55, "After Sundown," Chas. Moss.
103, "The Proud Turk," J. S. Bergheim.
237, "Figure Study," Count W. von Gloeden.
248, "The Twice Unwelcome Calm," John Howson.
254, "Waiting and Watching," Miss Emma J Fitz.

The judges have been by no means lavish with their awards, and this is not to be regretted, as it is merely bearing out the recommendation of the conference of the judges.

We have been curious enough to analyse as far as possible the processes used by exhibitors, with the following results:—

Platinum	113
Carbon	49
Bromide	44
Gelatino-chloride	37
Silver	33
Collotype	9
Photogravure	4

This is interesting, as giving one some idea what processes are most favoured by exhibitors. There is certainly one thing noticeable, and that is the very few exhibits of photo-mechanical process prints. This is to be regretted, and we certainly are much disappointed, for we generally look to the Pall Mall Show for the latest advance in this branch of work.

THE APPARATUS SECTION.

The "Allendale" lantern is shown, and marks some distinctly new features in lantern construction. It is small and light, and can be easily affixed to almost any ordinary camera stand. The usual metal tube of the ordinary lantern is in this replaced by a mahogany box, on the front of which is the projection lens, whilst on the top is a lever which can be moved backwards and forwards, and raises a metal screen, and allows the image to pass. On turning this lever still further the screen descends and the slide holder, which is an open-work metal frame, revolves, bringing a new slide into position, and the one just shown above, so that it can be taken out and replaced.

Mr. Samuels shows a new form of changing back, in which the lifting frame is attached to the bag and draws right up; and the plates, which are placed back to back in double frames with non-actinic material between, are placed at the rear. This is well made, and from trials seems to work satisfactorily.

J. Barnard and Son show two boxes of colours, one containing varnish colours and the other water colours, both specially prepared for lantern-slide painting.

Holmes and Watson, of Danbury Street, Islington, show Matthews' portable lantern, which is the neatest, lightest, and most novel form of lantern we have seen yet. We shall devote a special note to this next week, by which time we shall have practically tested it.

The same firm have an enormous camera, which they have built for photo-mechanical reproduction work, and which has every possible movement that can be desired. The front is raised by means of a winch at the side, and the vertical and horizontal swing to the back is obtained by a wheel at the back, a side swing being provided for in the same way. The back of the camera is constructed to run on 2 in. gas-pipes, and the bellows can be made to extend to 20 ft., if required, as different lengths may be inserted in the centre at will. The double back has inner frames for smaller sized plates, sliding on brass pillars, to which they are instantly clamped by screw-nuts, this being somewhat on the principle that is used in America. The main idea of the makers has been to construct a camera which should have every possible movement required for practical work, and yet be not burdened with elaborate workmanship and costly wood, so that we have a well and strongly constructed camera, suitable for process work at a very reasonable price.

C. S. Scott shows two lantern-slide printing frames which are capitally designed and just suitable for the purpose. An inner

frame of brass is provided to take the negative, and this can be shifted about sideways or lengthwise till the desired bit is seen through the 3¼ aperture in the front. A cardboard mask is then placed on the negative and made to coincide with the aperture. This takes the lantern plate. The back is then put in, and the frame is ready. The half-plate size is fitted with an adapter for quarter-plates, and this new frame can be thoroughly recommended.

J. Swift and Son, of 81, Tottenham Court Road, have a case of their new projection lenses, which we have before had occasion to speak so well of.

Taylor, Taylor, and Hobson, of Slate Street Works, Leicester, have a case full of their portable caskets of lenses, all of which are now fitted with their new standard screw threads, and in which any complete combination may be put away intact instead of having, as heretofore, to be pulled to pieces.

G. Houghton and Son, of 89, High Holborn, show the Holborn printing frames with hinged springs and print indicators; a walking-stick tripod with self-contained collapsible head and sliding extension legs, with eccentric grip fixing, which is firm and rigid, yet light, and will be of great use for hand-cameras. They also show Clement and Gilmer's Telephoto lens, and illustrative work by the same.

J. R. Gotz, of 19, Buckingham Street, Strand, shows a new camera, the "Psycho," which has a long extension, with arrangement also for using with short focus lens, an axial swing-back, rising front actuated by a pin in a ratchet and conical bellows, but so constructed that it may be used for stereo work. The camera is beautifully made and decidedly light.

F. Thevoz and Co., of Geneva, show a volume of "Zermatt," illustrated by collotypes, of the excellence for which this firm is now well known.

Emile Frechon, of Boulogne-sur-Mer, has also a volume illustrated with collotypes interspersed in the text, the same idea as we utilised in our "Sun Pictures" of last year.

R. Field and Co., of 142, Suffolk Street, Birmingham, show the Watkins Standard exposure meter with extra ring for enlarging, and also the "Junior" Watkins meter, both being provided with the new blue glass.

Fuerst Bros., of 17, Philpot Lane, E.C., show samples of Metol-Hauff, Glycin-Hauff, and Metol cartridges, and also four prints from negatives of the same subject which received 2, 4, 12, and 24 seconds respectively, from which is certainly proved the enormous compensating power of Glycin for over-exposure.

W. Watson and Son, of 313, High Holborn, E.C., a new studio camera, 15 by 12, with interchangeable repeating back, and fitted on their improved studio stand, the special features being the method of raising and lowering the stand, and the arrangement of the repeating back. We need hardly say that these are characterised by that excellence of workmanship and finish for which this firm is so famous. The same firm show a 10 by 8 Acme camera with aluminium fittings, which is extraordinarily light, and has a new form of conical bellows which certainly is a great improvement, as lessening the chance of cutting off any portion of the view. The other exhibits, the Alpha and Vanneck hand-cameras, were not in position at the time of our visit.

Adams and Co., of 26, Charing Cross Road, and 81, Aldersgate Street, show a case of their hand-cameras—the '94 Adams, with the improvements of the rising and cross fronts, swing-back, shutter, and changing-box; the twin-lens Ideal, with the improvement of the full-sized finder, and rising and cross fronts; the No. 2 Ideal, with the improved pneumatic regulation shutter; the Adams changing box, which was noticed in our last issue; and they have also their "Stenope" or pinhole lens with various apertures, constructed in aluminium, their aluminium view-meter, and an aluminium focussing glass; their pantoscope with chromoscope attachment for tinting lantern slides, and also a lantern slide camera.

E. M. Richford, of Snow Hill, London, E.C., shows the latest form of "Nameit" for printing titles, etc., on negatives, etc.

Archer and Sons, of 43, Lord Street, Liverpool, have also on show one of their Unilux biunial lanterns, which we shall hope to notice more fully in a coming issue, as likewise Anderton's stereoscopic biunial lantern which is to be shown by Messrs. R. Field and Co. every Monday, Wednesday, and Saturday at 8 30 p.m.

R. and J. Beck, of 68, Cornhill, E.C., have on show an advanced No. 2 Frena Camera, which besides the advantage of being quarter-plate size has some distinct novel features which render it still more useful and complete. The method of changing the film is slightly altered, and may we say improved, and instead of the exposed films lying at the bottom of the camera, they now lie at the back; this enables the size of the camera to be much reduced. The indicator is improved and cannot get out of order now. The lens is a 5½ in. Autograph R.R. working at *f*/11, and is provided with stops from *f*/11 down to *f*/64, so that time work may be done with it and such small stops combined with the swing-back will enable it to be very useful for architecture. The shutter has been re-modelled and the various speeds are obtained by shifting the screen from the bottom of the camera, and another improvement is that the same release will give instantaneous and time exposures. In the former case the release is pushed in, and in the latter pulled out. The finders too are a great improvement, in that the mirror is put behind the ground glass at an angle of 45°, and one is able to see the image in the very brightest light without difficulty.

The greatest advance and most striking novelty is the focussing. The 5½ in. lens is set to a focus of 20 ft. and over, but supposing that it is desired to obtain a picture of any object within that distance a supplementary lens is affixed to the front, which shortens the focus, and by using four different lenses all objects up to 3 ft. may be taken. This camera will not be ready for delivery for another six weeks, and as soon as it is ready Messrs. Beck have promised to let us have one for trial, and we shall then describe it more fully with diagrams.

The same firm are also showing their Frena cycle clip, a neat little album for holding Frena films, and a metal clip for holding the film whilst developing. The price of the Frena No. 2 camera loaded with forty films is £8 17s. 6d.

During the course of the Exhibition there will be displays by means of the optical lantern, every Monday, Wednesday, and Saturday evening, as below:—

Sept. 25. "Views in Italy," by Mr. Henry Little.
„ 27. "The Tower of London," by Mr. T. E. Freshwater.
„ 30. "Manchester Past and Present," by Mr. S. L. Coulthurst.
Oct. 2. Slides by Members of the South London Photographic Society.
„ 4. Slides sent to the Exhibition for Competition.
„ 7. AMATEUR PHOTOGRAPHER Prize Slides, 1893.
„ 9. "Variety in Hand-camera Work," by Mr. W. D. Welford.
„ 11. "A Visit to the Zoo," by Mr. H. Sandland.
„ 14. Slides by Mr. J. Carpenter.
„ 16. "A Photographic Trip to Spain," by Mr. F. P. Cembrano, jun.
„ 18. Slides by Members of the Birmingham Photographic Society.
„ 21. „ Messrs. West and Sons.
„ 23. „ Mr. J. B. B. Wellington and Mr. Birt Acres.
„ 25. „ Mr. Richard Keene.
„ 28. „ Members of the Newcastle-on-Tyne and Northern Counties Photographic Association.
„ 30. „ Mr. J. Dore.
Nov. 1. "Pictures taken at the Photographic Conventions," by Members thereof.
„ 4. Slides by Members of the Photographic Club.
„ 6. „ „ „ London and Provincial Photographic Association.
„ 8. Slides by Members of the Manchester Photographic Society.
„ 10. Special Lantern Night in Aid of the Photographers' Benevolent Association.
„ 11. To be announced later.
„ 13. Slides by Members of the Amateur Photographers' Field Club.
„ 15. To be announced later.

Tickets of admission have to be specially obtained for these, and it is intended to provide seats this year, which will be a great improvement.

We shall defer our notes on the pictures till next week.

What the press says:—

The Times.

The exhibition of the society for 1893 (the 38th of the series) fully maintains the standard we have been accustomed to expect in the illustration of the extensive and extremely varied range which photography covers. In addition to the examples we have already mentioned, the display of landscapes and portraits by a large number of amateur and a contingent of professional photographers has, of course, an interest of its own, to many people perhaps the chief interest of the exhibition. Of late years the claims of photography in this direction to the title of art have been persistently urged and as persistently disputed, and the question does not appear as yet to have found a satisfactory solution. Photographers themselves are not unanimous upon the point; that is, if we may judge from the pronouncements and writings of some of the most prominent members of the society whose exhibition we are now reviewing. For these there are no possibilities for art in photography. It is unnecessary, however, to enter into the merits of such a question here. The Photographic Society is



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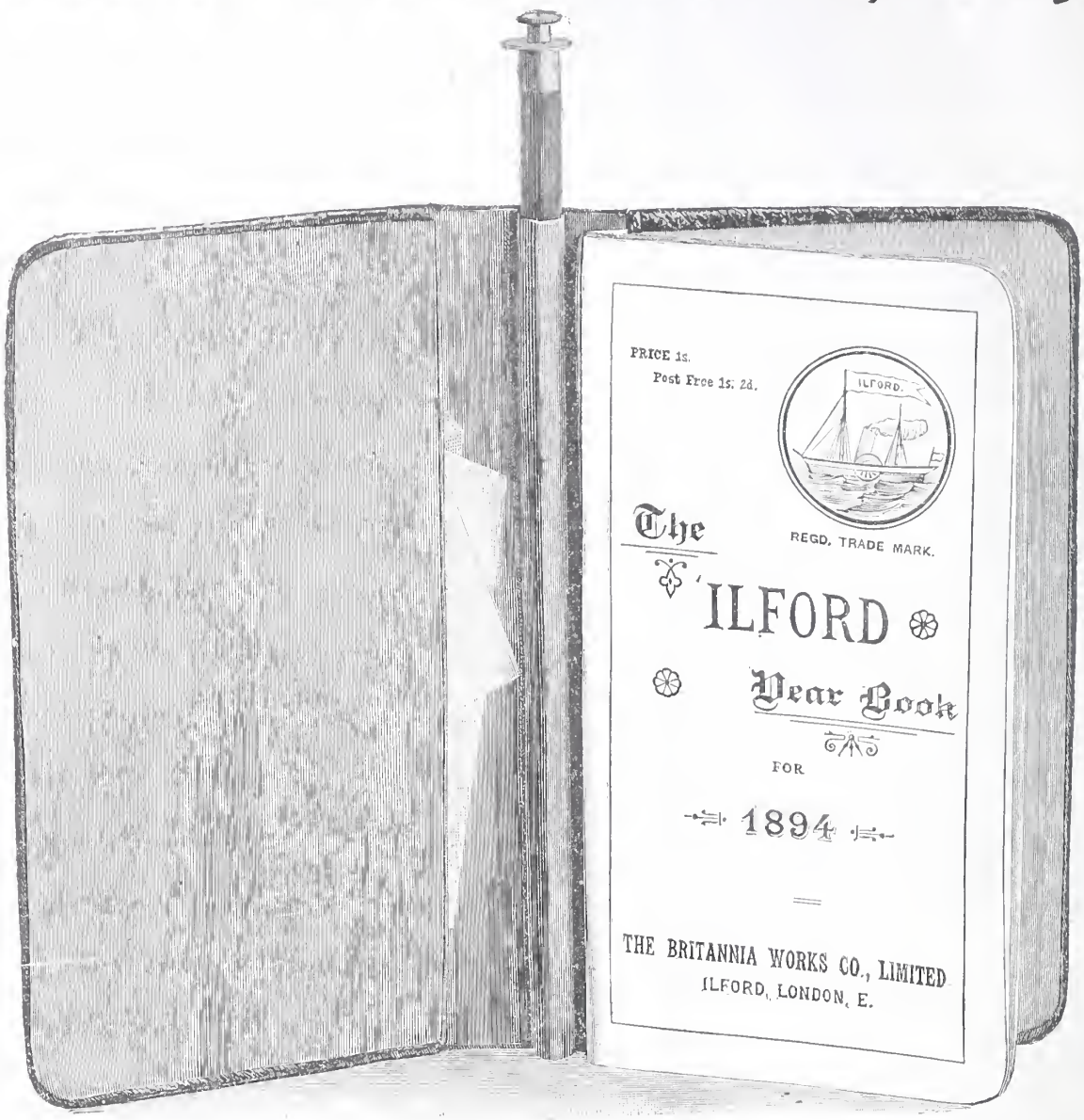
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not an artistic but rather a scientific Society. Its principal aims are evidently to foster the researches of science in the advancement of the optical and chemical investigations which result in the triumphant discoveries with which photography from time to time startles the world; to encourage perfection in the instruments and apparatus employed; and to preserve the standard of perfect technique so necessary for the successful application of theory to practice. To the scientific photographer, the terms perfect negative and perfect technique have absolute and definite meanings. Qualities such as clearness and brilliancy would appear to be essential. On the other hand, in the production of results which would appeal more strongly to the eye of an artist than the ordinary topographical view or commercial portrait, negatives would probably be used and methods employed which it would be the duty of a jury of scientific photographers to dismiss as imperfect.... On the whole, it is a very good exhibition; the best, perhaps, that the society has yet given us.

The *Daily Chronicle* has merely a few comments on the pictures which we need not reproduce.

The *Daily News* says:—"If the collection now arranged is not of more than average interest, there is plenty of work that is sufficiently important either artistically or scientifically. Novelty is not a conspicuous feature, though it is noticeable that there is an increasing tendency amongst both landscape and figure photographers to make their productions as much like those of the painter as possible."

The *Daily Telegraph* does not stint its praises:—"Advancing by leaps and bounds, the study and science of photography, as reflected by an exhibition of the Photographic Society of Great Britain, held in Pall Mall, leaves, apart from the great unsolved problem of colouring, little to be wished for by admirers of the beautiful. Rarely has a more attractive show been held, the high pitch of perfection to which many of the works are brought giving visitors a first impression that they gaze upon delicately-finished water-colours or artistic crayons rather than products of the camera. Every branch of skilful development receives full representation, and where so much is delightful and clever the judges must have found it a hard task to allot their favours."

ROYAL CORNWALL POLYTECHNIC SOCIETY.

THE PHOTOGRAPHS.

In their report of the Photographic Department, Mr. W. Gage Tweedy, of Plymouth, and Mr. W. Naylor Carne state:—

The judges were much impressed by the general high level of excellence reached by most of the exhibitors, and by the almost total absence of mediocre and common-place work.

In many exhibitions the fact that wall space is paid for seems to deter the Hanging Committees from excluding any work that may be sent in, lest the finances should suffer, and the result is that the good work has often to be painfully picked out from amidst very inferior surroundings. This, the judges are glad to observe, is not the case at Falmouth, and the absence of any charge for wall space, and the distinction conferred by winning the medals of the society have the effect of encouraging merit and excluding the failures of the incompetent.

PROFESSIONAL SECTION.

Turning now to the exhibits, and taking them in the catalogue order, the judges observed that:—Nos. 700-704 (R. Terras), although sharp enough in one plane, have little depth of focus, and the very dark backgrounds swallowed up the subjects. Nos. 708-711 by the same artist are well composed and well lighted, though low in tone, but the detail is not sharp, and the models unprepossessing.

No. 713 (R. Lord, 1st silver medal) is one of the most perfect things of its kind ever produced, even by the famous Rejlander, and has all the character and humour of a Webster, with better drawing.

Nos. 714-718 (R. Frost, 1st silver medal for 714, "Iris,") are remarkable for the perfect local rendering of the different planes of the objects, and for the exquisite delicacy of the gradations in the high lights of the petals. This is particularly seen in the prints on gelatino-chloride paper, and the picture 715 on bromide paper shows strikingly its failures in that direction.

Nos. 720-724 (J. H. Coath, 1st bronze medal) are cleverly-told stories, but are somewhat too suggestive of the shop show-frame.

Nos. 734-739 (W. J. Byrne).—Of these, 735, 1st silver medal, "A Budget of Newspapers," is delightfully original, well thought out and capitally photographed; a little variety in the models would have improved it. Another first silver medal was awarded this artist for 738—"The Judging at Richmond Horse Show"—a good series of quick outdoor work in a branch unaccountably much neglected by professionals.

Nos. 740-744 (E. D. Lavender, 1st silver medal).—Two large frames of panel portraits in platinotype, as good in all respects as it is possible to make them, and three large direct portraits, of which 744 is perfectly charming.

Nos. 748-750 (E. Scamell, 1st bronze medal for 750).—748, "At Home Portrait," should have stopped there, and 749, "The Houses of Parliament," are spoilt by an obtrusively painted, in boat; but 750, "Interior of St. Mary's Church," is a splendid specimen of a church interior, in correct perspective, as well worthy of a medal.

757-760 (F. W. Edwards, 1st silver medal), interior of Westminster Abbey. Perfect work, printed in a most unpleasant colour.

764 (J. H. Gear, highly commended), cattle lying down and nicely grouped.

767, by the same artist, is a beautifully rendered picture of the Shrine of Edward the Confessor, and the difficulties of halation are quite successfully overcome in this case.

AMATEUR SECTION.

Amateur photography does not show up in this year's exhibition so well as usual, hand-camera work, the speciality of the amateur of the latest fashion in photography, being badly represented, and the more serious work of the scientific amateur hardly at all. The faults of under-exposure and lack of sharpness are painfully visible.

Nos. 851-854 are under-exposed and considerably worked up, apparently with black chalk.

855-860 (A. R. Dresser, highly commended) are enough to show what an amateur can do who really knows something of the art. No. 859, a study of the heads of two "doggy" gentlemen, is full of character, as is also 855 by the same artist.

861-870.—H. Tonkin, of Penzance, showed a fine collection of enlargements, for which he was awarded a second silver medal.

871-874, C. Court Cole, stained-glass windows rendered on isochromatic plates in something like their true values, and also 875-878 (1st bronze medal for 877), beautifully crisp Thames scenes with sky and its reflections in running water, perfectly rendered.

Nos. 879-882 (C. R. Taunton, 1st bronze medal for series).—Hand-camera work tolerable, but under-exposed. Pity there was not a better display in this popular branch.

883-885 (E. Dockree, 1st bronze medal).—Good and correct studies of architecture. 887 ought not to have been sent; they look like first attempt with an objective not corrected for photographic use; the magnification is insufficient, and the definition left out.

Nos. 888-894 (A. W. Gottlieb, 1st bronze medal for 893).—Meritorious.

895-896 (A. G. Tagliaferro, 2nd silver medal).—896, a well-arranged study, sharp, and well composed as to details. 895, a French peasant girl, sticking wild flowers about a wayside image of the Virgin, is equally good.

902-908—Fair average work, the Roman Baths at Bath perhaps the best.

There was no exhibition of apparatus this year. One hand-camera holding six plates five inches by four inches was brought up from the mechanical department for inspection, and this, though showing much ingenuity and admirable workmanship by its inventor, was considered too complicated and bulky for honourable mention. It showed no practical improvement on existing forms.

Other exhibitors in the Photographic Department included:—Professional—Messrs. W. M. Harrison, W. Illingworth, G. T. Harris, F. A. Lee, W. M. Warneuke, W. J. Anckorn, F. Whaley, Louis Dupres, M. H. Chubb, and J. A. Draycott. Amateurs—Viscount Maitland, Messrs. E. Beringer, S. Tresidder, jun., Sidney Brackspead, and Miss Katie E. Truscott.

Filing by Photography.—"The Insurance File" has made its second appearance, and cannot but prove of great value to the rapidly expanding world of assurance, for it contains in convenient form a complete collection of the latest reports of all the life assurance companies doing business in the kingdom. These are reproduced in reduced facsimile by photographic process, so that the work is quite an interesting example of practical photography. The work does not compete with the more elaborate insurance publications, containing analyses of the annual accounts, by which insurance readers are so well served, but it contains an excellent summary of the figures it reproduces, and a chapter on "The Salient Features of Life and Other Insurance Offices," which is well worthy of the attention of readers in general. The peculiar process of reproduction has been much improved since the first issue, with the result that the letterpress, although sometimes inconveniently small, is always clear. The valuable work exemplifies a good idea well carried out.

To the World's Fair.

BY A LUNATIC WHO WENT THERE.

(*Continued from page* 145.)

CENTRAL PARK was a revelation to all of us. We had said that there were better parks in London than in all America, and we had almost decided to miss Central Park entirely. In our insular, prejudiced way we felt sure that an American park would be either just rough ground with a few drives cut through it, or else trim and artificial landscape gardening. But we were undeceived. The park carriages take us round the whole park for a shilling, allowing us to stop off as long as we like at any point and to go forward by a later carriage; and they gave us an opportunity to really see and appreciate the combined work of nature and man. The Art Museum in the park is a building well worthy of the chief city of a great country; and its store of paintings, sculptures, and other art works deserves careful and leisurely study. The sculpture galleries are well worth attention. Casts from the masterpieces of the world are there; and also many originals from the recent Italian schools. There are many examples of American work as well, and as we admired the novelty of subject, and the vigorous, direct treatment characteristic of a vigorous, virile race, we wondered why American sculpture should be so utterly unknown in the Old World. Is the Old World so utterly prejudiced, so utterly wrapped in its old traditions that it has no power of appreciating the work of the New? As we went through the picture-galleries the same thought pressed upon us, and though it is no doubt heretical to say so, the members of our party are prepared to contend that the Old World is a loser by her ignorance of the art of America. Not only in this New York gallery, but still more in collections we saw afterwards, the fact that there is an "American school," or the material for one, was forced upon us. It is not a large school, apparently, for many of the American painters, like those of any other country, are mere copyists, imitating as closely as they may the touch and style of some particular European school, or possibly of some single worker. But there are some who have felt the spirit, the inspiration of their own land, who paint the ocean, the rolling prairie, the dark mysterious forest, and the scenes of the home-life in a way in which no European painter has seen them, Perhaps some day there will be a school of American photographers whose work will show us that the art instinct can exist even in the dollar-hunting life of the States.

We do not appreciate American art. We do not know it. Even the Americans seem to despise it, for they import ship-loads of European copies and forgeries, at prices above what they will give for more meritorious works of home production. And in the fine-art repositories, where reproductions of all the best European work may be bought in carbon or photogravure, it is difficult or impossible to find a reproduction of an American work unless it represents some battle or other scene, and so appeals to the public by its subject rather than by its art value. A book of process reproductions of some of the best American pictures should find a warm welcome in Europe as well as in the States.

But I have digressed shockingly. If I go on like this, I shall fill THE AMATEUR PHOTOGRAPHER until Christmas.

Rochester, New York.

We decided to spend one day here, but have made it into two Rochester is not only the headquarters of American photographic manufacture, but also a most beautiful city. The three great falls of the Genesee River, which run the factories, supply the electric light, and are the real *raisons d'etre* of the city, are well worth the photographer's attention. When we came yesterday they were as dry as possible, every ounce of water was running through the mill races. To-day, being Sunday, most of the water goes over the falls, and a heavy rain in the night has helped to fill the river. About nine miles away the river falls into Lake Ontario, and this morning we went by electric car to Ontario beach for a swim before breakfast. The road, like most of those in Rochester is lined with trees almost into the heart of the city. All the roads and avenues are very wide, with ample space for carriage traffic in the centre, and with the car lines running on a broad grass-grown and tree-shaded strip on each side, outside which, again, there are broad, smooth footpaths. The city has a fine park along the river bank on the side away from the lake, and if surroundings count for anything, Rochester folk should be a happy folk, and Rochester photographers (amateurs) should be ever busy.

As I said before, Rochester is the home of many photographic industries, the best known of which is the manufacture of Kodaks and film. As we knew that the Eastman Co. had given assistance in the making of arrangements for our party, we made bold (or Shaunessy did) to ask if we might inspect their factory, for, said we, in the worst case they can but refuse. 'Tis true that they demurred somewhat, for, of course, they could not make their factory a general show-place, and miscellaneous people tramping round in the film department would be specially disastrous, because it would be liable to cause dust; but the difficulties were overcome, and we were allowed to see most of the place. I can't give you a description—no time; but someday I may. We were astounded at the size and completeness of the three factories. One immense one—six or seven stories, and as big as a town-hall—is for camera-building. Another, on the next block, and standing back in a pretty garden, is the examining, packing, forwarding, and office department, and is also where the developing, printing, and enlarging are done. We were introduced—in some little fear—to Mr. Eastman, for after seeing the big place, and the number of people, and knowing how far their wares are sent, we expected a somewhat stern, awe-inspiring director. But Mr. Eastman is quite like an ordinary man, quite young and friendly. He seems to know as much about photography in England as he does about it in America—which is saying a good deal. The third, and latest, and largest factory of the Eastman Co. is at Kodak Park, and is called the Boulevard factory. It lies back a long way from the avenue, and is surrounded by its own grounds—*really* a park. For the folks take a pride in their factory, and keep two or three gardeners continually attending to the grounds. At this factory the film is made and the Solio paper. The manager who showed us the three places —Mr. Mora—was very kind, and answered all our questions. He even told us, from the books, what was the average output of paper and films, and how many pieces of cabinet size that would represent. Also how many cabinet pieces were used by the World's Fair photographer and by other big men. We intended to remember the figures, but when we had finished the visit our notions were hazy. I am sure Mr. Mora said they made a hundred and sixty million miles of paper in a week; and yet I know that can't be it. Malcolm says it was six thousand miles of paper in a year, and Shaunessy says that six thousand was the number of 10 by 8 pieces used by the World's Fair man in a week. Smith says there was no six about it, in connection with paper, but that the six thousand was something to do with the rolls of films. Anyhow, the figures were astounding; and after seeing the buildings, the engines, the emulsion-factory, the dynamos, etc., six million or sixty million seem just as reasonable as six thousand. One simply cannot realise that "press-the-button" photography is so big.

I think a greater surprise was in store for us, though, when we went out along St. Paul's Street, for the tramcar conductor, seeing that we carried cameras, pointed out to us the works of the Bausch and Lomb Optical Co., and the Photo-Materials Co., two other enormous factories. To realise that these were in addition to the Eastman Co.'s works, and that they were all kept running by amateur photography was difficult. They are enormous buildings, such as we see in Lancashire, used for cotton factories. And, in addition, there are in Rochester two other camera factories and another lens-making concern, the Gundlach Optical Co. We have not seen these, but we saw some of their cameras and the Gundlach lenses in New York, and from what we heard they must have a very far-reaching business. At any rate, the goods are good. The Rochester Optical Co., curiously enough, is not optical, but makes cameras and other woodwork, and very good woodwork too. It has several patterns of field cameras, and several hand-cameras. Also a very good hand-stand camera with several patented attachments.

The Photo-Materials Co. is managed by Dr. Passavant and Mr. Reichenbach, who left the Eastman Co., and between whom and the Eastman Co. there have been several law suits. They are pushing cut-films and cut-film cameras against the roll-holder system, and there is likely to be a fight. The Photo-Materials Co. also make a gelatino-chloride paper which they call Kloro.

Exposition Flyer.

On this wonderful train, which runs 980 miles in exactly twenty hours, including stoppages, one is apt to moralise on British and American methods of travel. The speed over a thousand-mile journey, and the magnificent time-keeping, are not the greatest wonders about the train, for its luxurious appointments and smooth running are matters to marvel at. Of course, it is a "vestibuled" train, with a passage running from end to end. It has separate lavatories for gentlemen and ladies in every car, and has a sumptuous dining car, buffet car for smoking and light refreshments, and library car where writing can be done in real comfort, as I am now finding. The cars are coupled, or "pumped together," in a novel way, by vacuum couplings, which make the train into practically one solid projectile hurtling through space. This system, combined with the well-kept surface of the road, makes the running so smooth that it is almost impossible to believe the speed is so great. Shaunessy has been blazing away with his hand-camera with the train at full speed, giving time exposures on some of the more picturesque passengers. He declares that they will come out as sharp as needles, and proposes to demand a fabulous sum from the New York Central and Hudson River Railroad for permission to

reproduce them as testimony to the smooth running of its great train. He has not decided whether to demand a round sum in cash or a perpetual pass over the road. We laughingly, chaffingly ask him what use he could make of the latter. He says he is thinking of taking one or two head shades and reflectors and using the train as a regular studio. He argues that all the wealthiest Americans travel on this train, that these people (the men, at any rate) live at such high pressure that they never visit an ordinary studio, and "calculates" (he is quite Americanesque now) that he could net 300 dols. a trip, and that in a few years he would have such a collection of negatives of prominent people as would bring in a handsome income from re-orders. Then he would settle down at Clifton (the Canadian side of the Niagara Falls). Poor Shaunessy! But then he always was an enthusiast and a visionary. And the train *does* run very smoothly; and we spent yesterday at Niagara, a day calculated to make any man an enthusiast, to rouse the dullest into a dream-land of grand ideas. With one it is a scheme for gain, with another it is a longing for wide travel, with a third it is a yearning to be a modern Bayard, to right the world's wrongs, and to bear the burdens of all mankind; but all who see Niagara and see it aright are seized by some form of mental intoxication.

We arrived at Niagara late in the afternoon, primed with stories of hack-drivers who charged a dollar if you stood within a few yards of their vehicles, of hotel-keepers who made an extra charge for permission to go into the dining-room, and of waiters who expected a "tip" for permission to go out again. But we met with no extortion, we paid no tips, and we were treated with a courtesy and civility that we should not have expected from Liverpool cabbies or Scotch waiters (I dare not mention London in this connection). The "express agent" who met us on the train took our order for a carriage, and sold us a ticket. The charge was the legal fare 9 dols, (or, say, 36s.) for a six hours drive. The rate is higher than it would be in most parts of England, but in the States, where money has less purchasing power, it is a reasonable charge. Besides, six hours is practically a day, we had a good two-horse carriage; and I know many show places in England where £2 2s. a day is charged for a two-horse carriage. We could have hired a one-horse trap for half the money, or we could have made in four hours the trip to which we devoted six, and still have had ample time for sight-seeing. But we wanted to photograph, and we wanted a good driver, and our system of taking a two-horse carriage and devoting six hours to what is known as the four-hour round.

Arriving in the evening, we walked out after supper for our first sight and hearing of the Falls. The moon was almost full, the air was calm and still, and beautiful clouds, moved by a higher air, sailed slowly over the face of heaven. In a photographic paper I need not attempt, and if I did attempt I should fail, to describe Niagara. It strikes different people in different ways. People who have seen it, especially Americans, are liable to disparage it, but I have yet to meet the man who has spent an hour or two at Niagara, and who is not at least a mild enthusiast. That first night we simply lingered, first at one point, then at another, simply drinking in the spirit of the scene, and lulled by the hoarse, dull, quiet roar. We did not speak, for we all seemed spell-bound, and it was long after midnight before one of us, shivering a little in the chill of the spray, asked if it were not time to "turn in."

Yesterday morning we rose bright and early. An express agent was at the hotel, and on seeing our six-hour ticket, said he would call us a specially good carriage and driver. Certainly we could not have wished for better. At the beginning of our drive we called at the express office, where a benevolent-looking man took note of our ticket number, carriage, and the time, and in a few brief words that reminded us of the exhortation given to the driver of Buffalo Bill's Deadwood coach urged our hack-man to give us every attention and show us all he could. At the end of the trip we again visited the express office. The benevolent gentleman again noted the time and carriage, collected our ticket, and asked us if we had been perfectly satisfied with the drive and driver. I mention this at such length because many Britishers are so afraid of extortion at Niagara that they make their lives miserable, and often deny themselves the pleasure of a good ride with a good guide.

Our drive took us to the Whirlpool Rapid, where a miserable photographer begged us to be "took in this style," showing us double-printed pictures, representing men and women who towered higher than Niagara, or blocked out with their corpulent carcases almost the whole view of the Whirlpool Rapids. We declined the offer of immortality, as we did also at the Observatory house on the Canadian side, where they wanted us to don yellow oilskins and ugly caps and be "took" with a background showing the underneathness of the Falls. We made many exposures on the Falls, the Rapids—and the bridges, and, as on previous occasions, lamented the smallness of our outfits. No man can do justice to Niagara, but to even attempt it, he must have a camera of some size; backed, or multiple-coated plates to give ample range of gradation and to secure detail alike in the white, flashing foam and the dark-green water; and a perfect battery of lenses. Several photographers in the locality have really excellent series of views of the Falls. Mr —— —— has a few specially fine moonlight and cloud effects, and in almost all the different series the snow-scapes are very good. The views we admired most as an all-round collection were those on sale at the Burning Well, on the Canadian side. We asked for lantern slides of some of them, and were surprised to find that although they used to be made, the demand was now so small that this particular photographer no longer stocks them.

(*To be continued.*)

Brooklands (St. John's).—Ordinary meeting, 11th, the President, the Rev. H. Bethell Jones, M.A., in the chair. The chief business of the evening was a discussion on "The Development of Dry Plates," etc. One of the chief points raised was, which are the best negatives to print from, a black and white negative obtained by developing with such developers as hydroquinone, or from those developed with pyro? The majority of the members were in favour of pyro-developed negatives. It was proposed to commence a question book, in which the most interesting questions asked at any meeting would be inserted, together with answers, and it was arranged that this book should be circulated amongst the members, so that they might know the results, methods, and ideas of those more experienced than themselves. Four new members were nominated. The annual meeting was held on Wednesday, Sept. 27th.

Photography at the British Association.—A somewhat novel and interesting feature of the Nottingham meeting was the collection of scientific apparatus and exhibits which has been arranged in the physical and chemical departments of the University College. Among the exhibits was noticed a series of photographs by the Rev. F. J. Smith, which are called by their author "inductoscripts." They have been obtained by placing an ordinary photographic plate film upwards on a metal plate. A coin, or other metallic conductor with a design upon it, is then laid on the film and a discharge of electricity is passed from the coin to the metal plate. On developing the photographic plate in the ordinary way, the design of the coin appears upon it. The results exhibited show that the effect is more brilliant in oxygen than in other gasses, and is improved by increased pressure of the gas. Temperature does not greatly matter, but the strength of the discharge is of importance, a powerful one being most effective. By the use of certain metallic oxides and sulphides Mr. Smith has obtained beautiful results in various colours, all having appearance of plate engravings. The Cambridge Scientific Instrument Company contributed some new apparatus, notably an instrument made to the design of Professor Milne, F.R.S., of Japan, for the purpose of registering the intensity of earth tremors. The instrument, which is known as a tromometer, consists essentially of a rigid vertical support with a horizontal needle loosely attached to it; the point of the needle rests in a hole in the support, and a fibre attached to its eye passes slantwise to the top of the support. The needle carries a vertical mirror. Any movement which slightly tilts the support will cause the needle to move greatly, and the motion can be registered by a beam of light thrown on the mirror. In Japan, where earth tremors are continuously taking place, and earthquakes are matters of daily occurrence, the instrument is invaluable, but we learn that similar instruments are to be erected in England also under the direction of a committee of the British Association. Sir David Salomons sends a hand arc-lamp for spectrum analysis, and an apparatus for projecting solids on a screen. Messrs. Pyke, Harris and Co. exhibit a laboratory alternator and a transformer, which it may be hoped will do something towards a more general study of the properties of alternating electric currents. Selections from their stock of instruments are also sent by Messrs. Newton and Co. (electric and other lanterns, etc.), who also contribute several sets of lantern slides, among them being a series illustrating bee culture; by Mr. R. W. Paul, the maker of the Ayrton-Mather galvanometer; and by Mr. W. Hume, Edinburgh, who sends the koniscope and pocket dust-counter designed by Mr. John Aitken. The photographs of a physical character, in addition to those previously mentioned, include Professor Boys's photographs of a flying bullet and Dr. Isaac Roberts's admirable astronomical photographs. These latter are chiefly of nebulæ, and in some cases have required an exposure of four or five hours, representing an enormous amount of patience and skill on the part of their author. Scientifically they are interesting, not only as maps of the celestial sphere, but also as showing the probable mode by which the heavenly bodies are formed; they give us, in fact, all stages between the meteorite and the starry nucleus which has thrown off other nuclei by its rotation. The promoters of this little exhibition deserve great praise for the way in which they have compressed so much that is interesting and valuable to members attending the various sections into so small a compass, and we hope the example will be followed in future years.—*Ex.*

Holiday Resorts and Photographic Haunts.

THE WEST SUSSEX QUADRILATERAL.

CHICHESTER.

CHICHESTER, L.B. and S.C.R., 66 miles, is situate at the south-west corner of the quadrilateral and is particularly rich in work for the photographer, foremost of course being the Cathedral, which is a striking object from the railway, whichever side you approach the town from. Possibly the best general view of the cathedral may be had from just outside the station to the left. After leaving the station and passing along the street, which is distinctly countrified, one soon comes in sight of the fine old Market Cross built in the reign of Henry VII.; although much knocked about, it is well worth a little careful study and a plate.

Before reaching this, however, we pass the old Canon Gate which leads into the precincts of the cathedral and the Bishop's Garden. I had hoped to obtain a plate of this, as I had prospected round there when detained on my road to Midhurst, but now I found the roof off, scaffold poles up, and British workman in possession, three of them, with their hands in their pockets discussing the knotty point of whether it was time to beer or not.

Turning up a very narrow little court just past here, we entered the cloisters and found our way round into the cathedral. Here we had a few minutes' chat with Mr. Chas. Benford, the sacristan, who



BOXGROVE PRIORY—WEST END INTERIOR.

by the bye has written a capital little guide to the cathedral, which we advise every visitor to buy, and then he lets us through some gates and unlocks a narrow old oak door, by which we gain access to a dreadfully dark and narrow winding staircase and thence into the triforium, where, just level with the altar, we make an exposure on the opposite triforium, which is particularly interesting as showing the old Norman arches and later work side by side. It is a great privilege for us to be allowed up into the triforium, and we certainly appreciate it. Here there are plenty of traces of Norman work, and we discover that all the interior work above the beautiful arches is filled in with huge lumps of chalk, and everything is smothered with a fine grey dust, which makes us look before we have finished, so far as our legs go, at any rate, very much like millers.

Leaving the triforium, we do some work by the presbytery, and then are informed that the cathedral is to be closed, this being the rule between 1 and 2 daily; however, we set our camera up and get a general view of one side of the nave, showing the lower arches, the triforium, and clerestory, the differences of style being very striking here also. We are locked in the cathedral for the hour, and whilst exposing, prospect round generally, and decide on one or two other little bits we must get—one of the lower part of the south-west tower, which Mr. Benford describes as "a very pure 'bit' of the original cathedral," and this with some of the later pillars gives one a chance to again point out the Norman and later work,

At least three or four days could well be spent in the inside of the cathedral by the architectural photographer, but we must do a little work outside, and going out by the fine west porch and round by the Campanile we take a corner with three distinct types of windows. Now round the cloisters, and looking through an iron gateway we see a small piece, which will be reproduced, which is exceptionally interesting; so Mr. Marshall goes off for the keys.

This little square of burial ground is called "Paradise," and soon I am busy photographing there; and now a most unlooked-for thing has happened. It is proverbially hard to get into Paradise, but we found not the slightest difficulty, and carefully locked the gate behind us, but when we want to get out we can't. This is a nice state of things indeed! Either the gate required a shift or something or the Chichester folk are not in the habit of getting into that desirable little place, and it takes us a good five minutes to get out.

We have not exhausted the work in and about the cathedral by any means, but we make for St. Mary's Hospital, which is a rare quaint old place now used as a sort of almshouse, little rooms being built each side under the one roof, which is black with age and gloom, of old oak rafters. At the end is a chapel with a very fine carved oak screen and some fine carved miserere seats. Whoever wishes to photograph this must use a doubly backed plate, for it's a dreadfully trying subject.

We have reluctantly to get home, for the shadows are lengthening, and the light is getting poor, and although we should like to linger longer we dare not, for we must get something to eat, and the trains do start so dreadfully punctually. I paid a second visit to Chichester on the Sunday afternoon, and as we could not get home till late, we were obliged to get some refreshments there, and to my utter horror were charged such an exorbitant sum that I shall always remember Chichester and the —— Hotel. I paid, and said nothing, but mentally recorded a vow not to forget it, for I could not have been charged more at the Hotel Metropole in Brighton, or the most exclusive west-end hotel in London. Therefore, all ye would-be visitors to Chichester, 'ware sharks, and patronise a humble cookshop or more homely pub, but not an hotel.

SHORT, SUGGESTIVE NOTES.

BY E. J. MARSHALL.

Rooke's Hill, 72 ft above the level of the sea. Note the old entrenchment of the Trundle, its deep fosse, with an outer and inner vallum. Any connection with the Romans? Yes, doubtless, but its shape and fragments of pottery found there prove it of Celtic origin. Before we bid you farewell at Chichester we will have a few words on these old hill mounds and fortifications.

Rooke's Hill in the Modern Times of 1645.—Picture a body of 1,000 men, mostly of the yeoman type, armed with clubs. They are neither "Royalists" nor "Roundheads," but a third party formed for the defence of homes and granaries against the plunderers of both parties. Their banner is a white sheet. Their cry—

> "If you offer to plunder or take our cattle,
> You may be sure we'll give you battle."

Fairfax, the Parliamentary general, at first encouraged them, but he finally suppressed his "club men," for "they seriously obstructed his levy of men and money by divers outrageous proceedings."

For the present we must rest awhile on Rooke's Hill and enjoy the magnificent view.

The Roman and the Celt.—Between the Trundle and Valdoe coppice, half a mile to the south, are ancient earthworks, possibly the summer camp of the Roman soldiers quartered in Regnum (Chichester). In the intervening hill side are a series of hollows, side by side, possibly marking the dwellings of the native Celts and sutlers attending the camp. Away to the left is Hayes Down, with its recently discovered Celtic cave dwellings.

Follow the road behind the race stand through the woods down the hill. The woods passed, turn off the road on the right to Cairney Seat, an ornamental building taking its name from an old servant of the house. Here a good cup of tea and a rest may be obtained.

May the day be clear and the tide well up in Chichester Harbour! Can you not understand why the district before you was the home of Celt, Roman, Saxon, Dane, and Norman? Could there be found a more acceptable harbour than Bosham Creek for the Norseman "Viking," that is, the "Creek-man"?

Before you is the Selsea promontory of the Eocene period. There Wilfrid, the first bishop of the S. Saxons, placed his cathedral till the encroaching waves compelled its removal to Cissa's Ceaster. Before leaving Cairney, as a matter of curiosity, see the shell house.

Enjoy your tramp down hill, past the Pheasantry placed in a chalk pit, and the groves of fine evergreen oaks. When the Duke is not in residence permission may be obtained to see the pictures and works of art in Goodwood House.

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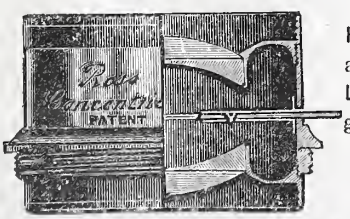
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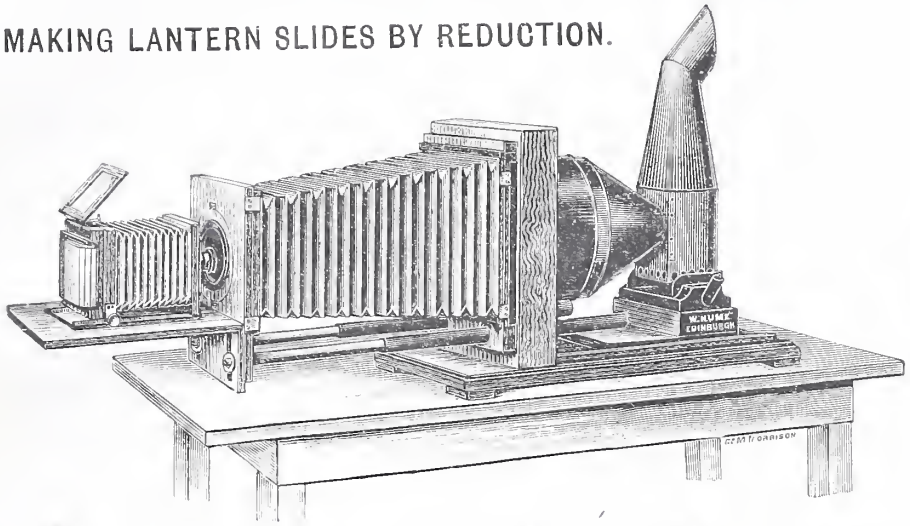
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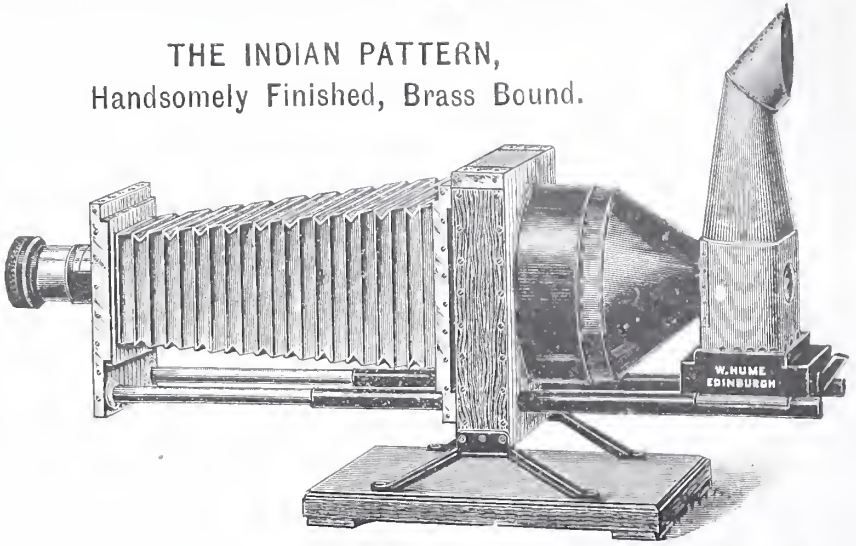
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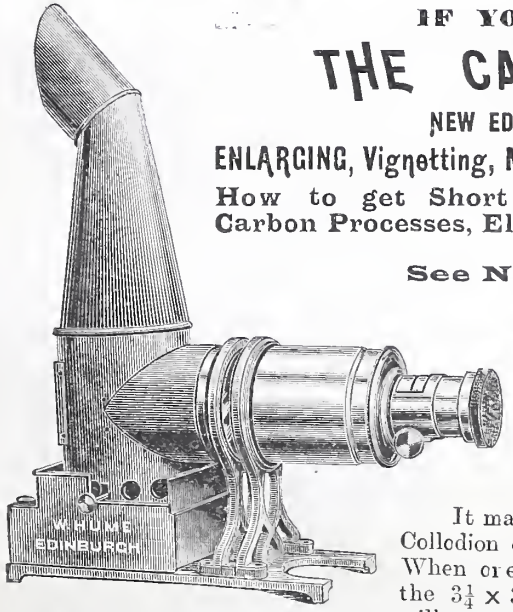
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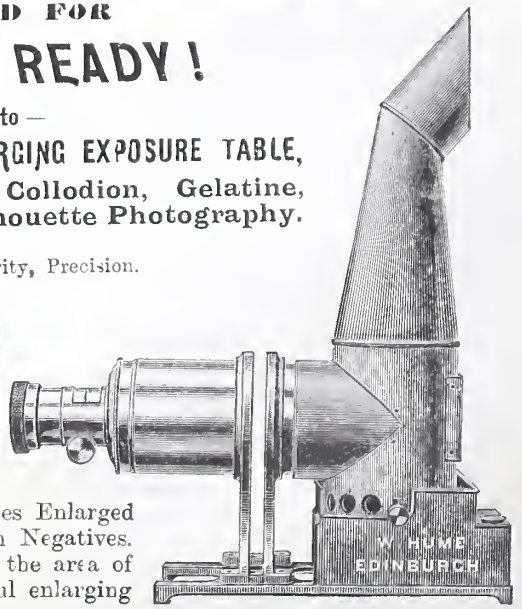


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The Minerva Slab.—Find a gardener at the side gate, and if possible see the slab. The slab was found at Chichester when digging the foundations of the Council Chamber. Supplying the possible missing words and letters, we learn that a temple to Minerva and Nepture was there erected by the authority of the Roman Emperor, Tib. Claudius, and of Cogidubnus, the king of the Britons; that one Pudens gave the ground for the site, and that a corporation of smiths (probably workers in Sussex iron) defrayed the cost of erecting the temple.

This Pudens has been ingeniously connected with Pudens mentioned in 2 Tim. iv. 21.

Ducal Goodwood lacks the mellow age of our two manors. It was in the neighbouring manor of Stratone, and from the freeman Goodwin, who held it, the name Goodwood is probably derived. Out of no lack of respect for its noble and generous owner, we ask you to gather your facts from the pages of Kelly's Directory. Yet we dare not pass by the magnificent cedars. On the road to Halnaker note the high park walls, which a country youth told us were to keep out the foxes!

A Short Historical Sketch of Boxgrove and Halnaker.

The entries in Domesday show Halnache to be the more important manor, though Bosgrove had the church.

Early History gathered from the name "Boxgrove." "Box," the Saxon hundred in which the manor is situated; "grave," A.S. *grafan*, to dig. An ancient British ditch, or fosse, once the line of defence against foes from the S., can still be clearly traced through Boxgrove parish.

The Norman Time and Onward.—The Great Roger, having secured both manors from the Conqueror, confers them on his eldest son, Robert de Belesme. This rebellious Robert de Belesme forfeits his manors, and Robert de Haia receives them from Henry I. Robert de Haia was a cousin of the Conqueror.

The manors are held by the descendants of Robert de Haia until Lord de la Warr's exchange for a manor near Southampton. Charles, Duke of Richmond, became the purchaser in 1765.

Robert de Haia, the lord of Halnaker, was the patron of the Abbey of L'Essay, attached to his Norman home.

To this abbey is given the Church of Boxgrove with its tithes, and a cell is founded near the church by three monks from L'Essay. Robert rapidly adds to his gift the churches and tithes of seven surrounding manors. Rich gifts are made by his successors, and by donors outside the De Haia family. The Priory increases in wealth, and at the Dissolution of monasteries in 1535 its revenue is equal to £3,000 per annum of our present money.

Halnaker.—The house, now in ruins, was built by the second Lord Delawarre in the reign of Henry VIII.

The Ruins.—Their importance as evidence of a new era in architecture. Hitherto the development of architecture has been marked by our churches; in the future, evidences of development will be shown in the houses of our nobility and in buildings consecrated to learning. Castellated architecture is no more: the feudal baron is softened into the courtier, his stern alarums are changed into merry meetings, his dreadful marches into delightful measures.

The last resident owner of Halnaker was the Countess of Derby, who died in 1752. Note what time and ruthless mutilation have done since that date!

A few Conjectures aided by Drawings made in 1825.—The building was quadrangular, the gateway before us had octagonal towers on each side. The rooms on the right were on "my lord's side," those on the left on "my lady's side." Note the narrow windows which show that defence is still necessary.

Pass through the gates into a quadrangle (now an orchard): clustered chimneys, gable ends, and broad windows are before us. Compare these windows with the windows on the outside. Across the quadrangle is a doorway still easily distinguished. On its right was the great hall; on its left the court-room. The hall had much beautiful carving.

Two doors are seen on the further side; over one are the words "Les biens venus;" over the other, "Come in and dringe." One door led to the cellar, the other to the kitchen. The chapel, its remains easily found, was on the east side of the quadrangle. We will now leave you to your own fancies, and you may enjoy a pleasant half hour under their guidance.

On the outside, to the N. of the house, note what appears to have been a reservoir. You will admire the magnificent avenue of Spanish chestnuts.

Boxgrove Priory Church and the Priory Ruins.—The ruins of the Priory Refectory are some fifty paces to the north of the church, the ruins of the Chapter House adjoin the church. The exact boundaries of the priory cannot be defined.

Boxgrove Priory Church shall now be our text-book. Enter the church by the porch, stand under the centre of the tower. On each side you have a transept about seven paces in length. Before you a choir 83 ft. in length; behind you a shortened nave of 18 ft.

Take seven paces, the length of the transept (the eastern limb of the cross was often the length of a transept). You halt near the last of the solid columns. Include this portion of the choir in the space covered by your transepts and nave, and, roughly speaking, you have



Boxgrove Priory—West End Exterior.

probably the ground plan of the Early Norman Church built by the De Hai, on the site of the old Saxon Church. Taking this ground plan as a nucleus, let the stones teach us how the church grew during the next 400 years.

Help Given by our Camera—See our illustration No. 1. You stand at the entrance to the choir with your face to the West.

Growth in the Norman Period during the first quarter of 12th Century.—Note the plain, round arch in the south transept, its square order and impost. Notice the round arch of the old window in the wall a little to the left, a window now blocked up by the porch of the Decorated period. Notice more elaborate recessed Norman arches in the south aisle of the nave; their carved cushioned capitals, the slight chamfer; view these arches from the other side, and note the attempt of the builder to add the dog-tooth ornament. Why did he stop?

Growth during the Transitional Period, the last quarter of the 12th Century.—The Priory has grown richer with its surplus funds. The Critheren carry westward the nave of the Norman church.

Step outside the church and stand near the door seen on the right of our illustration. From this door take thirty-three paces to the west. You are walking over the foundations of the exterior walls of the extended nave. The pointed arches with their columns to the north of you—through which were the cloisters—are the work of the Transitional builder. In the recess to the west of these was a north aisle. Draw a line about two paces from the foundations of your paced-out south wall, and it will pass over the foundations of the arcade columns of the south aisle.

Re-enter the church. The Transitional builders were compelled to make the Norman work correspond to some extent with the Transitional work now added. Hence, as we see in illustration, the Norman columns are converted into clustered keeled columns with carved cushioned capitals and pointed arches.

Look up at the Transitional arches in the stage of the tower and the groined roof of the nave. Continue, in imagination, this roof over those boundaries of the extended transept you have just measured outside the church.

Stand by the north clustered keeled column at the entrance of the choir. Examine the wall connected with this column and note a portion from which the plaster has been removed. Here you see the masonry of the Norman builder before the Transitional builder fashioned his keeled columns. Note the fragment of mural painting on this masonry. Some think the door of the staircase to the Rood Loft of the early Norman church was here.

DURHAM REVISITED.

By HUGO MEYNELL.

The middle of July found me once more in the old city, partly on photography bent, and with the intention of at least doing my best to get a collection worthy of competition. I found plenty of new views, and some of those already taken were taken again in hopes that a year's work had made me more proficient.

Having added a cheap narrow-angle landscape lens to my outfit, I was able to take several views from the surrounding hills, which hitherto I had found impossible. My intention was to have spent some days in making some of the many excursions in the neighbourhood, but these had to be confined to two. The weather was not suitable to plans made beforehand, and most of the views taken were got when a favourable hour's sunshine permitted an exposure. Several times did I come home with but one or two or even no plates exposed, but the man who takes most negatives is not the best photographer, though plate makers think otherwise.

The first excursion was half a day at Brancepeth Castle, about four miles from Durham and easily accessible by rail. The castle (the seat of Lord Boyne) was mostly rebuilt seventy or eighty years ago, but being entirely on the old plan shows no sign of this. Permission to photograph was easily obtained, and seven plates were exposed, one of the best being of the south-west front. Another very good view is from the bridge across the high road. The interior is shown, and contains, among other things, a fine collection of armour.

My second excursion was unfortunate as regards the weather, as after four plates had been taken rain came on, and I took the next train home, being nearly wet through. This was at Barnard Castle, a picturesque town on the Tees, made famous by Turner. It is some twenty miles from Durham, and well worth a visit, and also a capital centre for many beautiful places, such as Raby Castle, Rokeby, High Force, and the Upper Tees Valley. I only got one of the castle, looking down. The only spot I could find to fix my camera was a bit of waste ground through a mill yard, and here, when all was ready, I was informed permission to take photographs was required. Civilly asked of the manager, it was promptly refused—the only refusal I have ever had. There was nothing for it but pack up and go, but while a useful assistant packed up my case I slipped in a slide and got a successful shot nevertheless.

To return to the city, from the park above the station a magnificent view of the cathedral and castle is obtained.

The next view to be noticed is of Framwellgate Bridge, crossed on the way to the market place.

Good views may be had from Elvet Bridge at the other end of the town, looking up the river, and showing a quaint old house built on one arch, once a chapel and now a blacksmith's forge; and looking down the river, with the castle and old houses beyond. There are several other good pictures from close here—a view from the Prebends' Bridge, one of the prettiest spots in Durham, for here are the celebrated "banks," the River Wear completing nearly a circle round the cathedral and castle.

In a field adjoining St. Oswald's churchyard, and close to the South Road, a quarter of a mile along which brings one to Littlenigh Wood, there are some very fine Spanish chestnuts which still survive the smoke from Elvet Colliery. A coal-pit is not generally a good subject for a picture, but this is the exception to prove a rule.

The Hallgarth Farm, not more than half a mile away, is the original farm of the Benedictine monks in the days when the cathedral was theirs, and some of the old barns still remain. For picture making it has been much spoilt by the erection of a telephone post, which, unfortunately, is unavoidable. The beauty of Durham has not been improved during the last year by these posts and the network of wires which cross the city in every direction. It is a pity the Dean and Chapter cannot keep an eye on all the town, and preserve its beauty as carefully as they do on the banks. I can advise anyone in search of a good place to spend a photographic holiday to come here.

SWANAGE.

G. P. S. SCUTT.

HAVING read with interest your contributors' descriptions of various photographic resorts, I venture to bring before your notice a short sketch of the attractions, photographic and otherwise, of a little rising watering place, hitherto unnoticed by photographic journals. I refer to Swanage. Swanage is situated in the Isle of Purbeck in Dorsetshire, on the South Western Railway. The little town possesses very many attractions to the photographer, as scenery of all descriptions is available in the vicinity. The town itself is in parts very old and quaint; and the old stone roofed houses will afford many picturesque bits to the photographer. One of the great attractions of the place is Tilly Whim Caves, about a mile from the town, of which several views should be taken; these caves are reputed to have been formerly used for smuggling purposes, and I may add a very grand sea may be seen here with the wind south-west. A little further on is the Anvil Point Lighthouse, which should on no account be missed, also an inspection of the tower should be made. Durlstone Castle, a large building newly erected on Durlstone Head, should be visited, from the top of which a magnificent view of the English Channel, Hampshire and Dorsetshire coasts and the Isle of Wight is to be obtained. Adjoining the Castle is the "Great Globe," a curious masterpiece of modern art and originality; it consists of an immense ball of stone, on which are correctly delineated the various geographical markings of the world. This structure was erected by George Burt, Esq., J. P., and with the whole of Durlstone Park and Castle thrown open to the public with that gentleman's usual generosity. Swanage is but ten minutes' ride by train from Corfe Castle, which undoubtedly holds the premier position for a ruin of its kind in this country. A photographer will find several full days' work here, not omitting a view of the Castle and keep from the church tower.

Much might be said about the photographic propensities of these ruins, but as my space is limited I will return to my original topic, referring the reader to an article on Corfe Castle in the near future. The snap-shotist will find many opportunities of exercising his skill in and around Swanage. The beach will afford several pictures, and the jetty with its group of weather-beaten fishermen several more. A view of the High Street looking up and looking down should be obtained; both including the Town Hall front, which is very quaint, originally coming from the old Mercer's Hall in London. Swanage is probably supplied with a better steamboat service, than almost any place on the South Coast, there being at least six boats daily running between our quaint old-time village and Bournemouth (eight miles), on the way to which the curious old rocks, named "Old Harry" and his wife, should be taken. It should also be noted that boats run daily to the Isle of Wight, and Weymouth, and frequently to Cherbourg and the Channel Islands, and other places available. Many snap shots may be obtained on the pier, of boats leaving or arriving. The boats include several of the finest of their kind, including the "Monarch," "Windsor Castle," and "Victoria," of all of which good pictures may generally be obtained from Swanage Pier. The fauna and flora of Swanage will send joy to the heart of the naturalist, by its variety and superabundance, while the conchologist may fairly revel in his hobby. The air at Swanage is reported by eminent medical authorities to be extremely pure, and is undoubtedly very bracing. Good sunset effects may often be obtained from the pier, or on the adjoining Peveril Point, across the water, with only a thin streak of land on the horizon. Lodgings are cheap and easily obtainable. Studland, three miles from Swanage, is reputed to be the second prettiest village in England; and very many choice bits are to be obtained there, but they must almost all be taken in the morning to get the light correct. Studland Church is a very quaint old Norman edifice and well worth a plate or two. A tramp to St. Alban's Head, not omitting Dancing Ledge on the way, will well repay the trouble, the scenery there being exceptionally grand. Swanage is becoming more and more a photographic resort, many cameras arriving daily from Bournemouth, from where about 1,000 excursionists arrive

daily during the summer months. A more detailed description of the town and its vicinity may be obtained from one of the several guides published; or should any amateur want any information I should be pleased to oblige with any in my power.

Paget plates may be obtained from Mr. T. Powell, photographer, High Street, who supplies his customers with a dark-room for changing purposes.

THREE WEEKS IN THE NETHERLANDS.

Dordrecht.—The oldest and in the Middle Ages the most wealthy commercial city in Holland, is easily reached from Rotterdam by one of the numerous small steamers that ply up and down the Maas.

The journey occupies generally about one and a half hours, and return tickets can be had for sixty cents, Dutch money, equal to one shilling English.

The scenery up the Maas from Rotterdam is most picturesque. Many villages, numerous craft, and long Rhine barges are passed. Dordrecht is on an island, not surrounded by the sea—though that is not very far off—but by the river Maas. The island was formed by the inundation of 1421. Much of the country round about is in consequence marshy and flooded.

Delft.—Can be approached either by rail or boat up the canal from Rotterdam.

In fine weather the sail up in the little steam launch is very pleasant. It is little better than a flat with an asphalted roof at the bows, without rails of any kind, on which the seats are placed. Many bridges have to be passed under, but so low that you have to be almost prostrate, or, at any rate, stoop down on all-fours.

Delft, once so famous for its manufacture of pottery, we found a small, clean, deserted-looking place, its streets intersected with canals and decorated with long, straight, stiff rows of lime-trees. It now shines by the light of other days. It is no longer famous for anything. Even its pottery manufactures are of the coarsest and commonest kind.

Amsterdam.—The capital of Holland. One hears of it as a city built upon piles, and the houses are, as a matter of fact, constructed upon foundations of piles, which gave rise to the jest of Erasmus, of Rotterdam, that he knew a city whose inhabitants dwelt on the tops of trees like rooks. We stayed at the Bible Hotel, an excellent house to be in. The new entrance opens on to the Damrak, part of the canal of which has been filled up and the space filled with flower-beds, trees, and walks.

The central station is close by, also the quays, where the steamers start from to all the numerous places of interest near to Amsterdam.

The Damrak is one of the most central positions for a tourist to stay at, it being surrounded by public buildings. The exchange is but a few minutes' walk, also the royal palace, the Nieuwe Kerk. It is also the central point of the tramway system.

Marken Island.—Is situated in the Zuyder Zee, and is easily accessible from Amsterdam. Fishing boats will take visitors over from Monnickendam (three miles off) in about one hour, and the return ticket costs two shillings. Sunday is about the best day to pay a visit to the island, as the fishermen are at home, and the exceedingly picturesque costumes of both sexes can be seen.

The house of Marretye Thijssen has been for years a great attraction for visitors As everywhere in Marken, the interior is very clean and well stocked with furniture. The walls are adorned with bright copper dishes, pans, and chinaware of various kinds Delft, Saxony, Chinese, and Japanese, old plates, spoons, etc. The splendid colours and the blue wainscoating give the whole a warm and bright look. The bed is formed by a niche in the wall. This is one of the best class, made up of two or three well-stuffed mattresses, covered by elaborately-embroidered quilts and resplendent pillows.

Brussels.—Two days were spent in Brussels, which we visited by running up from Antwerp by express train. No fee was charged for photographing the Palais de Justice, which is said to be the largest architectural work of the present century, it being one of the most remarkable, if not one of the most beautiful, of modern buildings. It was begun in 1866, was formally inaugurated in 1883, and the cost amounted to fifty million francs (£2,000,000). The flights of steps ascending to the vestibule are adorned with colossal statues of Demosthenes and Cicero. The interior of the Palais includes twenty-seven large court-rooms, 245 other apartments, and eight open courts. The cathedral at Brussels is situated on a somewhat abrupt slope, overlooking the lower part of the town. It is an imposing Gothic church, was begun in 1220, has had many additions from time to time, and was thoroughly restored in 1848-56. The nave is of simple but noble proportions, and rests on twelve round pillars and six buttresses. The choir on ten round columns. We paid our first visit on a Sunday afternoon, when the whole space in the nave was filled with chairs, and crowded with devout worshippers, and there was some exceedingly fine singing.

On the Monday, when we went to photograph in the afternoon again, all the seats were cleared away, and women were engaged in washing the floors.

Hackney.—Ordinary meeting on 19th, Mr. W. Houghton (President) in the chair. Mr. S. J. Beckett showed boards for holding prints flat, held together by means of a leather strap. Members' work was shown by Messrs. Sodeau and Grant. Mr. Barnes showed an under-exposed negative developed for half an hour in Metol, and asked for a remedy. The general opinion was that it was useless. Messrs. Holmes and Watson showed Matthews's portable lantern; its weight was only 10lb., it is carried in a box 13½ by 6 by 5. It was a very ingenious arrangement, and had many improvements to aid the lanternist in exhibiting slides. A report of the society's outing (under the leadership of Mr. Gosling) was read. The dull weather rather interfered with hand-camera work; however, a few good snapshots were obtained. The excursion was to Kew and Richmond by steamer from Old Swan Pier. The latter part of the evening was devoted to an exhibition of members' slides with the lantern (under the management of Mr. Rose). Slides were shown by Messrs. S. J. Beckett, Carpenter, Cross, Grant, Hankins, Hensler, W. Fenton-Jones, Nunn, Roofe, Rose, Sharman, and Sodeau, from whom some excellent work was exhibited.

The Photographers' Benevolent Association. — Committee meeting was held on Friday, September 15th, at the rooms of the Photographic Society of Great Britain, Mr. A. Mackie in the chair. The applications for assistance were as follows:—First, an assistant who stated that he had come from the North of England on an engagement with a London photographer, and had been dismissed after working two and a half days, without notice or salary in lieu of notice. He asked for legal assistance in obtaining the money due, and a small loan to enable him to live until he could obtain the arrears or find a new situation. An immediate loan of £1 was granted, and the Secretary was instructed to instruct solicitor to proceed for recovery. Second, application for loan of £20 from assistant, who stated that his wife had been seriously ill for ten months and was now quite unlikely to recover. The doctor's and other expenses had taken the whole of his savings, and he was now threatened with proceedings for rent and rates. The loan was granted. Third, application for a grant of £1 to enable the purchase of a larger camera than the one at present possessed by applicant. He stated that he had been thirteen years in one situation, not as a photographer, and that he earned additional money by practising photography. In his situation he was receiving a salary of 18s. per week. The loan was refused, as the committee considered it was not a fit case for assistance. Fourth, applicant wrote from a workhouse infirmary. He stated that he was to be discharged cured in a day or two after being in the institution three months. Applied for grant of 8s. for railway fare to a town where he had promise of wet-plate work, and a few shillings for subsistence until first wage should be due. A grant of 15s. was made. Fifth, application for loan of £5 to enable applicant to pay small debts and reach a situation. Referred back to Secretary for further particulars and inquiries. Sixth, application for assistance, sum not stated, by an operator, who stated that he was penniless owing to illness, which had prevented him working for some months. Referred back for further inquiries to be made. Seventh, application for loan of £20 to assist in building a studio. Applicant has been many years in business, and stated the reasons which had caused him to fail. He had very small amount of capital in hand, and required £20 further to enable him to start again. Referred back for further inquiries. The Secretary reported on the position of several persons who had been assisted during the spring, and said that two of them who appeared to be in position to repay, at any rate a portion, of the loans granted to them, had failed to do so. The Secretary was instructed to write these people further, and to take advice as to the possibility of instituting County Court proceedings in one case, and criminal proceedings in another. The Secretary reported that several of the applicants who had been assisted last winter and during the spring were progressing favourably. Arrangements were made for the Lantern Evening which had been granted to the Benevolent by the Photographic Society of Great Britain. Messrs. E. Floate, Frank Hallen Smith, F. Nunn, J. H. Napier, W. T. M. Davidson, A. D. Fisher, Messrs. McIsaac and Riddle, and Misses Hardy and L. Hicks were elected subscribers. Mr. George Mason was elected an honorary life governor. Donations of £5 5s. from Mr. George Mason, £5 from the Convention per Messrs. W. D. Welford and Hedley M. Smith, were acknowledged with thanks.

Societies' Notes.

MESSRS. TAYLOR, TAYLOR AND HOBSON offer to purchase each year until further notice, for the sum of ten guineas given as a prize, the best negative taken with one of their lenses, and offered during the year for competition. (1) With this in view they will be pleased at any time to receive unmounted photographs, each to have pencilled on the back its title, the registered number and code of lens, and the value of stop used. (2) The prints must not be rolled or folded, but may be conveniently packed between two cards, and the whole wrapped in paper and endorsed: "Photographs—Fragile.—With care." (3) The prints must be from negatives untouched, except for the removal of spots. (4) The prize will be awarded for general attractiveness and interest of subject, skilful and artistic choice and treatment, the right use of the lens and camera, and for the technical quality of the negative. (5) The judges, after selecting the twelve best prints, will write for their negatives to be forwarded for inspection. If requested, Messrs. Taylor, Taylor and Hobson will forward suitable packing cases to receive the negatives, and every care will be taken of them, but the firm will not hold itself responsible for any loss or damage. (6) Entries for each year will close with the receipt of the first post on the last Monday in October, and the judging will then proceed, the result being made known by post, or through the photographic journals in due course.

THE North Kent Amateur Photographic Society (founded in 1887) is making energetic efforts to secure a good winter session. Arrangements are being made for a permanent dark-room, to be available for members at all times, with a large meeting-room attached. During the winter informal meetings will be held weekly, and on the first Friday in each month a series of lectures on popular and practical subjects, free to all photographers, whether members or not, will be given. On the third Friday in each month the usual society's meetings will be held. The Hon. Secretary, Mr. G. W. Cobham, 3, Edwin Street, Gravesend, will be pleased to give prospectuses and any information to amateurs wishing to become members.

MR. H. B. CONSTABLE, who for some time has performed the duties of the secretaryship of the Lewes Photographic Society, has resigned that post in consequence of his leaving the town. All communications should be addressed to G. Carpenter, 81, High Street, Lewes.

THE fifth annual exhibition of the South London Society will be held at the Peckham Public Hall, Rye Lane, Peckham, S.E., on Tuesday, Wednesday, Thursday, Friday, and Saturday, 7th, 8th, 9th, 10th, and 11th November, 1893. Classes open to members only: (A) Portraiture and figure study, including animals; (B) Architecture; (C) Landscape and seascape, above half-plate; (D) Landscape and seascape, half-plate and under; (E) Enlargements; (F) Lantern-slides. Medals will be given in the above classes according to the number of competitors and the quality of the work. In addition a silver medal will be given for general excellence; see condition 8. Open Classes: (G) Pictures which have previously received an award; (H) Pictures not previously medalled; (I) Lantern slides which have previously received an award; (K) Lantern slides not previously medalled. The silver and bronze medals competed for in the above classes will be awarded at the discretion of the judges. Entry forms and further information respecting the exhibition can be obtained from Chas. H. Oakden, Hon. Sec., 51, Melbourne Grove, East Dulwich, S.E. There will be lantern, musical, and other entertainments each evening in the small hall. Members and friends will be admitted to the exhibition on Monday evening, 6th November, by special ticket to be obtained from the Hon. Secs. *Conditions.*—(1) All exhibits entered for competition must be the entire work of the competitor, mounting and framing only excepted; (2) Exhibits in members' classes A to F must be printed from negatives taken since the date of competitor's selection to membership of the South London Photographic Society; (3) Pictures and lantern-slides previously entered in competition at any of the society's exhibitions are not eligible for further competition, except in the open classes; (4) All pictures should be framed and glazed, but unframed pictures will not be barred. The exhibitor's name and address, with title of picture and class entered for, must be written on the back. Pictures with the name of the competitor on the front will be disqualified. (5) Lantern-slides must be mounted and spotted in the usual way. (6) Enlargements may be by any process, mechanical or otherwise; they must be at least twice the size of the original (linear measure), and a print from the original negative must accompany the enlargement; (7) No member will be allowed to take a medal in more than one of the members' classes; members' successes in other classes will, however, be duly published. (8) The "General Excellence" medal will be awarded to the competitor who obtains the greatest number of marks (as decided by the judges' order of merit), in any or all the members' classes. This medal, as well as all medals gained in the open classes, may be awarded to members in addition to any medals gained under condition 7; (9) The maximum number of pictures allowed in each of the members' classes will be four, but any smaller number will be eligible, and the awards will be given for individual pictures and not for collective exhibits; (10) No exhibitor competing in the open classes will be allowed to send in more than four pictures altogether; (11) Lantern slides must be exhibited in sets of six, and no competitor will be allowed to send more than one set in any one class. (12) No fees are payable in the members' classes. The fees payable in the open classes are:—Classes G and H, 1s. per picture, 2s. 6d. minimum; pictures over 3 feet super, 1s. each extra; Classes I and K, 1s. 6d. each set of slides. (13) The judges will have power to withhold any award, and their decision will be final. (14) Pictures and lantern slides which have previously received an award can only be exhibited in Classes G and I respectively. (15) Competitors must fill up the entry form supplied by the Society, and send it, accompanied by the proper remittance, to the Hon. Secretary, on or before 27th October, 1893. (16) Lantern slides must be forwarded to the Hon. Secretary by this date. (17) All pictures must be sent, carriage paid, at owner's risk, addressed to the Hon. Secretary, South London Photographic Society, Peckham Public Hall, Rye Lane, Peckham, S.E., and must be received not later than 1st November, 1893. Exhibits may be left by hand on the 2nd and 3rd November, 1893, and the competitors are responsible for removing such exhibits at the close of the exhibition. (18) The Committee will take every care of the exhibits, but they will not hold themselves responsible for any loss or damage. (19) Ten per cent. commission will be payable to the Society on the amount realised by the sale of any pictures or slides. (20) The Committee shall have full power to refuse any work. Photographic apparatus will be received for exhibition, subject to the rules to be obtained of the Hon. Assistant Secretary, Mr. W. F. Slater, 169, Southampton Street, Camberwell, S.E.

THE following are the arrangements for the Hackney Exhibition:—Tuesday, October 17th, opening at 7.30, orchestral performance. Wednesday, October 18th, open at 12 mid-day, distribution of awards by Captain Abney. Orchestral performance. Thursday, October 19th, open at 12 mid-day, organ recitals; lantern slides in the evening (lantern). Entry forms must be received in by the 30th September. There is still a little space for trade exhibits, for the best show of which a silver medal will be awarded. Messrs. Marion, Wray, Powell, Platt and Witte, Doublet, Fuerst Bros., and others are exhibiting. Application for space should be made without delay to the Hon. Secretary.

STANLEY SHOW.—The apparatus section this year is to be in the main gallery, whilst the pictures will be hung in the Arcade Gallery as before. The following firms have already secured space:—Adams and Co., R. and J. Beck, Morgan and Kidd, Sands, Hunter, and Co., J. Piggott, and Platt and Witte.

Societies' Meetings.

Brixton and Clapham.—The last meeting was held on the 19th inst., the President, Dr. J Reynolds, F.R.G.S., in the chair. A demonstration upon carbon printing was given by one of the members, Mr. F. W. Levett. Four names were given in as candidates for membership, and further names will be gladly received.

Newcastle.—The last outdoor meeting was held on the 21st inst., Ridley Hall Woods and Staward Pele being the places selected for the day's operations. There was a large muster of members, who were reinforced by contingents from the Hexham, Sunderland, and Durham Photographic Societies. The day's work was done under almost perfect conditions as to weather, and many good pictures will doubtless result. Mr. J. Pattison Gibson, of Hexham, acted as leader of the expedition.

Birmingham.—Ordinary meeting on 19th, Mr. J. T. Mousley in the chair. This was the first of the so-called one-man exhibitions, inaugurated by the club, which it is proposed to hold through the winter. The gentleman showing, Mr. J. H. Pickard, had staged for inspection a large number of fine photographs ranging from the lordly 15 by 12, to the humble half-plate, and the exhibition was very much appreciated. Mr. Pickard kindly made the tour of the room giving interesting details of processes, etc., and answering the numerous questions put to him.

Fairfield.—The monthly meeting was held on 15th inst. The President being unavoidably absent, Mr. Forrest took the chair. An exhibition of photographic novelties was the subject of the evening's programme, Messrs. Archer and Sons, F. V. A. Lloyd, and Tomkinson being the exhibitors. Some very clever novelties were shown, including an electric reading and ruby lamp, a plate-drying apparatus, a novel washer to fit any basin, new P.O.P. mounts, and many other interesting articles. A very hearty vote of thanks was accorded to the various exhibitors, this concluding a very pleasant and successful meeting. The club has removed to new rooms, the address now being, Lecture Hall, Primitive Methodist Church, Jubilee Drive, Liverpool.

North Middlesex.—On the 20th inst. another of the series of instruction evenings was held, Mr. C. Beadle being in the chair. The subject, "Lantern Slides by Contact," was dealt with by Mr. A. J. Golding. He described briefly the *modus operandi*, explaining the kind of negatives which would give the best results; the method of obtaining the range of tones from red to black by a difference of exposures and restrained developer; the fixing, clearing, etc.; and them demonstrated his remarks by developing two plates. After this the members were set to work under his supervision, the result being that many really good slides were made, to the pleasure and profit of the workers. On October 9th Mr. W. E. Debenham will demonstrate "Wet Collodion." An interesting evening is anticipated, to which visitors are welcome.

North London.—On 19th inst., Mr. Douglas in the chair, experiments were made in the development of Nikko paper, the members bringing the developers preferred by them respectively in working bromide papers. The best and very similar results were obtained by the use of eikonogen and metol, only half the exposure being given when metol was used as the developer. The following formulæ were liked best:—

Eikonogen Developer.

Eikonogen	4 gr.
Sulphite of soda	16 „
Carbonate of lithium	2 „
Bromide of potassium (10 per cent. solution)	1 minim.
Water	1 oz.

(This is the formula first introduced, it is believed, by Mr. Cowan.)

Metol Developer.

The standard metol-soda developer of Hauff diluted with seven parts water. The pink colour of the paper will restrict its use. In answer to a query as to how the name came to be selected, it was suggested that the manufacturers, with trans-Atlantic modesty, had named it after Nikko, a spot in Japan, so charming that the Japs have a proverb, "He who has not seen *Nikko* (sun brightness) must not say *Kekko* (beautiful)." As there is plenty of shine and colour in the paper, some may contend that the appellation is appropriate.

South London.—On 18th inst., ordinary meeting, the President, F. W. Edwards, Esq., in the chair. The evening was devoted to a demonstration of "Lantern-slide Making," by Mr. H. E. Farmer. Several Ilford Special lantern plates were exposed under negatives of different characters, and afterwards developed before the members. He sketched the apparatus used by him for making slides by reduction, and explained the method of using the same. Some slides which were too dense for use by over-development were reduced by the use of sulphocyanide of ammonium and ferridcyanide of potassium, which the lecturer considered preferable to hypo and ferridcyanide. Slides requiring more pluck and density were intensified by using a bath consisting of uranium nitrate, red prussiate of potash, acetic acid, and water. In the event of the slide becoming too dense by this method, the red colour can be discharged by using a bath of carbonate of soda, and the toning, after washing, started afresh but not carried so far. Several methods of rectifying various faults were fully explained by the demonstrator. On October 2nd Mr. E. J. Lester will read a paper on "Out-door Portraiture."

Wigan.—On 21st inst. annual meeting. Annual report and balance-sheet presented showed a balance in hand of £2 13s. All retiring officers re-elected, with one exception, as follows:—President, Mr. J. A. E. Lowe; Vice-Presidents, Rev. J. S. Barnes, M.A., and Messrs. R. Wardman and G. R. Newman; Ordinary Members of Council, Messrs. John Smith, J. H. Atherton, B. B. Hartley, S Richardson, H. H. Hill, P. Clark, and C. R. S. Kirkpatrick; Hon Secretary and Treasurer, Mr. Fred. Betley, 10, Ashland Avenue, Wigan. Meetings held fortnightly, on Thursdays, in Y.M.C.A. Rooms Rodney Street.

SOCIETIES' FIXTURES.

Sept. 28—Liverpool.—Lantern Lecture, "A Holiday in Normandy," by Mr. Joseph Earp.
„ 30—Huddersfield.—"Remarks on the Huddersfield Hora," by S. W. Woodhead.
„ 30—Bristol Camera.—Excursion to Brislington.
„ 30—West London.—Excursion to Brentford.
„ 30—Northern Photographic and Scientific Assoc.—Excursion to Hyde Park.
„ 30—Leytonstone Camera Club.—Excursion to Sewardstone and the Valley of the Lea.
„ 30—Lincoln Camera Club.—Visit to Sudbrooke Gardens and Grounds.
Oct. 2—West Kent.—Annual General Meeting.
„ 2—Putney Photographic Society.—Introductory Meeting at 116, Upper Richmond Road.
„ 3—Brixton and Clapham.—Paper by Mr. E. Dockree on "Gelatino-bromide Papers."
„ 5—Aston.—Social evening.
„ 7—South London.—Excursion to Greenwich.
„ 7—Photographic Club.—Excursion to Hampstead Heath.

To Correspondents.

All communications for these columns are to be addressed to The Editor "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6162. **Platinotype Printing.**—Should be glad of information as to whether any compensation for over or under exposure is possible in development of the new cold-bath platinotype paper, either with the developing salts as sent out by the company or by using different formulæ. Also how long the asbestos, soaked in chloride of calcium, will protect the paper against damp; does the calcium get exhausted after the asbestos has been dried in an oven once or twice? Am I right in supposing that the preservative in the tint is asbestos soaked in chlorioe of calcium?—R. C. L.

QUERIES UNANSWERED.

Aug. 25.—Nos. 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.
Sept. 22.—No. 6161.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—En. Am. Phot.

H. S. W. E. asks whether the results obtained with the cold-bath platinotype are as satisfactory as with the hot-bath paper. What is the developing formula? Whether it is suitable for weak negatives, and whether sepia tones can be obtained, and what is the chemical used with the hot bath to give sepia tones? The results obtained with the cold platino paper are equally as satisfactory and permanent as with the hot; it is suitable also for weak negatives, as there is a tendency to increase of contrast. The formula for developing is—

(A) Oxalate of potash 1 oz.
Water 4 „

or

(B) Developing salts (Company's patent).. 1 oz.
Water 6 „

A gives slightly warmer tone than B, B gives more half-tone. A very useful note on this subject will be found on p. 6, July 7th, 1893. We believe that the addition of a little mercuric chloride to the developer will tend to give sepia tones as in the old process, and this is said to be the salt used by the Co. for obtaining sepia tones. Cold-bath platinos can be toned with uranium.

Glossy asks the best method to obtain a glossy or enamelled surface on paper prints. We ask, what prints? Assuming that they are albumen, coat a sheet of glass with enamel collodion, allow to set, and wash out the solvents, make a solution of gelatine, 10 grains to the ounce, slip the collodionised glass into the warm gelatine, immerse the print, bring the two into contact, raise out, squeegee well, allow to dry, cut round the edges with penknife and strip. If gelatino-chloride paper, rub a sheet of glass, ebonite, or metal all over with encaustic paste, or a wax candle polish, till it shows no marks, immerse the print in water till thoroughly soaked, place the glass under it, raise out and then squeegee, set up to dry, when dry strip by inserting penknife under one corner and pulling gently.

F. Ord Birkett.—We shall publish Eder's in book form. We give your second question up; it was a law before we came on the scenes, and has never been repealed. Possibly it may be to pay the Editor, though he does not get the money for the extra wear and tear on his brain in managing the loan of the slides. Perhaps we can take the tax off next year.

Rizzio.—(1) Badly yellowed and over-toned, and what a waste your sky is, a blank waste, a waste of paper and plate! Put in a cloud. (2) Over-printed and over-toned. (3) Over-toned. Too much foreground. (4) Ditto. (5) Ditto; negative lacks brilliancy. You attempt too much. Try and get rather nearer the things you want to take; now you waste a lot of plate, both top and bottom, and can't you take some things the other way of the plate, or won't your hand-camera turn over without falling to pieces? You ask whether there is any method of drying plates quickly after washing. Yes. Place the plates in three successive baths of methylated spirit, five minutes in each, rock well, blot off with clean fluffless blotting-paper, and place on the window-sill in a draught, or not too near the fire. Your gold bath turns black, and will not give nice tones after using once or twice, though you add plenty of gold. Now, what bath is it; what paper do you use; do you wash the prints well; do you filter it after use; do you use distilled water; do you keep it in the dark? Answer these, and we will answer you. Our next three Monthly Competitions are for lantern work.

Crown sends us a P.O.P. print toned in the Ilford bath, which is a very fine pink all over; and wants to know why. This is usually caused by toning in too strong a light, and long continued toning. He also sends us two prints on P.O.P., which have been shut up in a book for twelve months, and are much faded, and asks why. All ordinary paper contains hyposulphite or antichlor, agents, gelatine is hygroscopic, and contains about 17 per cent. of water always; therefore to keep prints, possibly prints which have not been properly washed or fixed, under such conditions is the best possible way to ensure fading.

H Watson.—All your three prints have a yellow tinge, and the high lights and faint details are eaten out, due probably to an acid toning bath, otherwise they are correctly toned. You ask why, when developing plates, they very often darken all over; well, this is rather vague, as you do not give any information as to developer used, but practically it may be put down to excess of alkali, insufficient bromide, and insufficient patience on the part of the operator, who maybe in haste and slops the alkali in wholesale.

J. EDWARDS.—(1) Negative rather too hard for chloride paper; we should advise you to print this on rough paper like mezzotype or else rough bromide, and then the slight movement would not show. (2) Ditto. (3) Spoilt by the flare-spot in the centre. (4) Good technically, but hardly worth taking. (5) Good, but would be considerably improved by some figures and by painting out the boughs on the left. (6) Good. (7) Ditto, a pretty little bit. (8) A charming little study, which we prefer in the matt surface. (9) Very fair, but a waste of plate and paper, we think. (10) One rather wants to see what the figure is doing, otherwise it is pretty fair, though so many lines are a little trying. (11) The best of the portraits, but this is far too hard. Coat the back of the negative with yellow matt varnish, and scrape it off over the clothes, so as to get more detail out. You have a slight tendency to under-expose.

BODMIN.—(1) A cabinet portait lens should be able to take either a single figure three-quarter length, or two figures three-quarter length. (2) Yes, two windows such as you describe would be plenty for a small studio. (3) Place the sitter two feet from background and about three feet from the source of light.

RUFUS has bought some aristotype paper and finds there are no instructions enclosed. Aristotype paper may be treated the same as any other gelatino-chloride paper. The following are the instructions in brief:—The printing is done in the same way as on ordinary silver paper, but it need not be carried to quite so great a depth, except very black tones are desired. The prints keep well, and may be stored many days before toning is resorted to. They should be protected from the damp. When ready for toning the prints should be washed in several changes of water till all milkiness disappears. The following toning bath I have used with success:—

Stock Solution A.

Distilled water	17 oz.
Sulphocyanide of ammonium	2 ,,

Stock Solution B.

Distilled water	17 oz.
Chloride of gold	38 gr.

For use take—

A solution	1¾ oz.
B ,, ...	1¼ ,,
Distilled water	17 ,,

This dilute solution will keep well for a long time. It should be strengthened from time to time with A and B when the prints tone too slowly. The wet print is how placed downwards in the toning bath, and the dish is gently rocked. Glass or porcelain dishes should be used. The print is fully toned in from two to five minutes. It should be carefully lifted up from time to time, and the progress of the toning watched. When the desired colour is reached it should be taken out of the bath, and the solution be allowed to drain off, and then, without washing, it should be transferred to a fixing bath for ten minutes, being carefully moved about from time to time. The fixing bath is made as follows:—

Hyposulphite of soda	1½ oz.
Distilled or rain water	17 ,,

I have not found that there is much loss of tone in the fixing bath, as in an albumen print; after fixing, the prints should be washed in several changes of clean water for two hours. The tendency to curl or drying is very slight; nothing to the extent met with in albumen prints. All toning operations should be conducted in subdued light. In hot weather, to prevent the films dissolving, it is advisable to harden them after toning, by soaking the prints in a weak alum bath, or in a solution of 7 drachms of alcohol in 3½ ounces of water. We may add that our experience is that the paper should be more deeply printed than albumen paper. It is better to put the prints into a bath of salt and water 1 : 20, then rinse and tone, and carry toning till, on looking through, all red has disappeared from everything but deepest shadows. Combined baths may be used, but we do not care for them so much. The prints merely require rinsing between toning and fixing.

E. HOWELL.—We will send you some slides on as soon as you let us know date you want them.

F. G. CLARKE.—All prints sent in are criticised, and any one is at liberty to see the competition prints on application and paying a booking fee of 1s. We have not received your print. Personally we have had no ill-effects from the use of metol, but we know of two cases where such have been felt, and this was due to using it with ammonia. What did you use?

DENSE has been using the uranium intensifier, but finds on washing that the whole of the intensification is washed away. This is due to the fact that the reddish-brown colour, uranyl ferro-cyanide, is soluble in water, particularly that which has a slight alkaline reaction. The best thing to do is to merely rinse the plate after intensification with water acidulated with acetic acid, then once in plain water and dry. Long washing is not necessary.

W. H. ELLIS.—Many thanks; we will use.

FRED DAVIS.—Yes, by dissolving the ounce of dry ammon. citrate in 10 oz. water you will get the same effect as by neutralisation, as suggested in note named.

BELL COTT asks whether an R R. will give him better results than a single lens. This is a question which depends solely upon the lenses; a cheap and bad R.R. is no more capable of turning out better work than a single lens. The only thing to be said is that probably the R.R. may work at a slightly larger aperture, and it is more suitable for architecture for groups and portraits in a studio. We should say a much better class lens was required.

DEVONIA wants to know whether we consider metol a good developer for snap-shot work as well as general use. Most decidedly, the most satisfactory of all developers. Also, whether gelatino-chloride paper is as good for general use as albumenised. Yes, we should say better. Whether one particular make is better than another is a matter of fancy. You pays your money and you takes your choice; they are all milky—beg pardon, they are all good. We infinitely prefer the separate sulphocyanide bath and the plain fixing bath. There is then no question as to their being properly fixed. We should advise the use of this.

E. P. VULLIAMY.—We hope to write you this week; the great fault of your negatives is due to fog and want of patience.

CONOR.—We will write you this week.

J. MARKHAM.—(1) Slightly over-printed, but an enlargement of this on rough paper with a good sky would be good. (2) Excellent, a rare good shot. (3) Process too hard, sail too white and wants sky. (4) Too much foreground. (5) The left side a little too black, otherwise good. (6) Sky line slopes, the pink tinge spoils it too. (7) Too much foreground and the hills are too clear, they almost project in front of the castle. Paint over the backs to keep them back in printing. (8) Too harsh, try another process. (9) Good, but we should have preferred a little less foreground and more sky. (10) Ditto, your work shows care, but there is a tendency to hardness. What developer are you using?

R. H. P.—The baby is very much under-exposed, and we should say the negative wanted intensifying badly. In the other print you have not sharply focussed, and it is much over-exposed or under-developed, and the negative wants intensifying. You are evidently a beginner. Send us up some negatives to look at, with full data as to exposure and development, and then we will try and help you.

P. JACKSON.—Letter by post.

CHEMIST.—No. 1 is well worth enlarging, especially if the arm in the background was painted out. Lindsay Hemery or Illingworth or Done or Martin—see advertisements—would do it for you. A good retouching medium can be made by dissolving—

Gum dammar	10 gr.
Canada balsam	5 ,,
Turpentine	1 oz.

We should say that the question of density was merely a question of time of development. We see no fault in No. 2, in the respect, at any rate. The formula for mercury solution is—

Mercuric chloride	10 gr.
Hydrochloric acid	1 drop
Water	1 oz.

Then wash well and blacken in ammonia 1 : 20; do not fix again. Always pleased to help you. If you got one of the lenses of the eurvscope type working at *f*/6, you could use it for all-round work and portraiture, but you do not state how much you can spend.

F. GARDNER asks whether American Aristo or any other collodio-chloride paper may be obtained in England. So far as we are aware, American Aristo cannot be had, but both Fallowfield, 146, Charing Cross Road, and Adams, 26, Charing Cross Road, sell collodio-chloride or celloidine paper. He also wants to know how to obtain a grey tone on platino paper, he gets too much contrast. Remedy, heat your developer; the hotter it is the greyer the tone.

W. W. H. sends us some films which are bad examples of mottling and fogged. We have met with both these marks when the film has been a little stale and under-exposed, and forced in development. The fog mark we think due to the slide not having been tightly closed.

E. W. H.—You must be using a very small aperture lens; we cannot understand your difficulty; have you got reflectors? The rule to find the distance is, add 1 to the number of times the negative is to be enlarged, and multiply by focal length of lens; therefore to enlarge half-plate to 15 × 12, $2\frac{1}{2}+1\times8\frac{1}{2}=28\frac{1}{2}$, distance between lens and paper; then $(2\frac{1}{2}+1\div2\frac{1}{2})\times8\frac{1}{2}=12\frac{1}{2}$ in. between negative and lens. Wheeler's hook on enlarging is the best, but Hodge's gives more information about home-made apparatus, and might suit you.

H. R. LAING BURN asks for formula for toning Nikko paper. This paper is merely a bromide paper with highly-glazed surface, and any formula which will tone bromide will tone Nikko; the one especially recommended by the makers is—

Sepia Toning Formula.

Hyposulphite of soda	10 oz.
Ground alum	1 ,,
Boiling water	70 ,,

Dissolve the hypo in the water first, then add the alum slowly. When all is dissolved the solution should be milk white. This solution should not be filtered, and it works better as it becomes a little old; it may be strengthened from time to time with a little fresh solution. Never throw the bath away entirely, but replenish in the manner stated. The best results are obtained by keeping the bath hot, or as warm as the emulsion will stand; say 110 to 120 deg. Fahr. To enable the prints to stand such a hot bath, they should have been put in a strong solution of alum and dried after fixing. In this bath enamelled prints will tone in from twenty to thirty minutes, and plain bromide in three-quarters of an hour. Until this bath has been used several times it may be inclined to bleach the prints a little, but as it grows old this tendency will disappear. Is this what you require? If not, please write again.

THORNHILL.—We have at last been able to find what you want. The numbers on the left of the line 1·5, 2·5, 3, 5, 10, 15, and 30, are the numbers which express the aperture of the front lens according to Dallmeyer's decimal system; those on the right, 1, 2, 3, 4, 5, 6, represent the points at which it is necessary to increase exposure in the proportion of 1, 2, 4, 8, 16, and 32.

NOVICE asks whether a focal-plane shutter fitted to his camera would make his camera useless for time work. No, a focal plane shutter (Thornton-Pickard's) is so arranged that when not requiring to use the shutter it may be either bodily removed from the camera, or if it is left *in situ* the opaque blind may be rolled up right out of the way. He also asks whether a lens working at *f*/8 would be fast enough for exposures of $\frac{1}{10}$ sec. It might be in a bright light, but as we cannot control this it would be far better to obtain one of the new Zeiss lenses, Series II., which work at *f*/6·3; or, if expense is no object, then Series I. The plates named would be quite sensitive enough. This correspondent also states that he sometimes finds black specks between the film and glass, which he thinks "is through a pinhole in the film and the developer getting between." How can they be removed? We cannot quite see that a pinhole would cause such black specks, but they could be removed by pricking out with a needle, or the effect could be nullified by spotting out the print.

O. FOLKARDE.—Had you used a slower plate and developed a little more carefully, you would have got a better result. Both your bromide prints have a tendency to yellow tinge in the whites, but you do not state what developer you are using. If ferrous oxalate, you either do not use sufficient clearing bath or do not wash sufficiently between clearing and fixing. Your own portrait is a little over-developed.

C. C. ROSS sends us a negative on an Eastman film which after development was immersed in methylated spirit to dry it quickly. The original size was 7 by 5, but it is now shrivelled and shrunk up to 4 by 5½. The Eastman Co. recommend Cresco-fylma, but this has been unsuccessfully tried. We would suggest soaking the negative in water for a long time to see whether this would straighten out the gelatine, and then try Cresco-fylma; if this was not successful, we should, if the negatives were valuable, soak for a long time in water, squeegee as well as possible to glass, and then dissolve off the celluloid by soaking in wood naphtha and amyl acetate.

PAREDAO (Brazil).—(1) Rather too thin a negative wants intensifying, we should think. (2) Far too much foreground and not enough sky. The effect of so much wood is sticky. (3) Very good. (5) Ditto. Are these clouds natural? (5) A long straight bridge like this is one of the very hardest things of all to treat artistically. It would have been better to have got a little further off and included more foreground. (6) Over-printed and over-toned. Possibly the negative would be improved by intensification. (7) Very good. (8) Just a little flat. Possibly your print developer is a little too warm. (9) Under-exposed for foreground, the whole of which wants painting over with yellow varnish to keep back in printing.

CLOVELLY.—For the future please let us have name and address with all queries, not necessarily for publication, but merely to satisfy our curiosity. The arrangement you sketch would do with double condensers, but you can do away with these altogether by using two powerful Defries lamps and arranging reflectors behind them.

POLLY.—Always glad to help you, and the more questions you ask the better we like it and the more work we see the less we grumble. (1) To explain this dark margin would require rather more space than we can give here, but you will always get it with small amplification. The more you enlarge the better the covering power of the lens. We should not call this negative under-exposed at all. (2) You could not do better than go to the Polytechnic at Regent Street and have a course of private lessons. (3) Considerably over-printed, and we should have liked to have seen a little more sky and less foreground. (4) Printed just a trifle too dark, and a few clouds judiciously inserted would make this a very nice little picture. (5) But for the background we should have said excellent. A plain background would have improved this enormously, and there is just a tendency to hardness in the petals, which is due to the use of too much pyro. (6) Much over printed, and the figure is too conscious. Had the subject been picking up stones, mushrooms, or something else, and not staring dead into the lens, it would have been better. (7) Here, again, the old man should have been looking at or talking to the child, and the background is too painful. (8) Water too hard, too white, and it wants clouds, and the figure is too central. (9) Too evident posing. Had you caught the children scrambling about the rocks and unconscious of the camera, it would have been better. Avoid actual sunshine for figures if you can. We shall be pleased to see you in November, and would like to see some negatives and more work.

The Amateur Photographer

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc, from 10 till 1 o'clock.

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Editorial Department—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

Terms of Subscription—

United Kingdom.....	Six Months,	5s. 6d.	Twelve Months,	10s. 10d.	
Postal Union	"	6s. 6d	"	13s. 0d.	
Out of Postal Union ..	"	7s. 9d.	"	15s. 3d.	

Trade Advertisements *are received up to Tuesday morning.*

Publishing Department.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

Undoubtedly the absorbing topic of the week has been the medalling at Pall Mall, and certainly, although it may be impossible for the judges to explain the whys and wherefores, there are not a few who would like to know what the influence at work was.

Opinions differ as to the child study by Mr. Cadby, but we have seen no defence yet of Miss Fitz's picture—we beg pardon, we should say print. On going round the Exhibition with a well-known professional, we merely pointed the medalled pictures out to him, and he wound up a fierce tirade by saying, "It's a premium on bad work to medal those two pictures." A well-known and prominent exhibitor and member of the P.S.G.B. said, "It's a disgrace, sir—a crying shame, and if I can force an explanation I will."

Certainly we have seen far better work than Miss Fitz's print placed in the third class of our Monthly Competitions, and it is just such a print as many of our readers who have been working at photography for about a month send us up for criticism. However, the award is made, and we suppose beyond a general grumble nothing can or will be done. We may, of course, be told by the authorities that be, to "keep your ain cart grease to your ain cart-wheels," but for all that we unwillingly recognise that this incident can do the P.S.G.B. and its Exhibition no good.

One of the daily papers, in a long leading article on the Exhibition, or rather on the advances made by photography and its applications, says: "A few hundred dry-glass plates are not a serious addition to the baggage of an expedition, and if the flexible films, *bromide paper*, or any similar substitutes are employed, the materials for a collection of negatives need not weigh above a few pounds." The italics are ours. We have not yet gone back to paper negatives.

Great has been from time to time amongst the professionals the outcry as to the enormous damage that amateurs have done to the profession. To the amateur is put down every ill and failure which professionals have suffered. To the amateur are of course, ascribed the fearfully low prices which have prevailed and are still getting worse in some parts.

Even Mr. H. P. Robinson, in a contemporary, recently says: "The causes of depression are to be found within the profession, not without, except indeed that the greater ease of production may be put down to outsiders. In this the amateur

has been a great sinner. It was that immortal cooking of his emulsion by an amateur that at one blow ruined professional photography and opened up the art to all; and his improvements have been the great cause of the increase in numbers in the professional ranks." What is the amateur to say? "Homunculi quanti sunt."

WHAT will professional photographers say to the following which has been sent us by a correspondent?—

LIKENESS

EXACT

IN WATER COLOURS,

FOR ONE SHILLING.

The Artist looks for patronage—not from a few at the usual prices—but from many, at the above astonishing low charge.

A SUN LIKENESS.

The celebrated Dr. ERASMUS WILSON, F.R.S., his opinion on Sun Likenesses, Photography, Carte de Visite, in many people is not satisfactory in producing a pleasing likeness; instead of blending and softening the lines of the face it throws them up in relief, so that it gives Age and a forced expression to the Face; you cannot tell Fair Hair from Dark, and the mouth is generally too large; it is an error to suppose that Photography on Paper will not fade, as the chemical is underneath, a bloom comes on and they fade gradually away. No new system can supercede a good Likeness in Oil or Water Colours. Witness some of our old English Family Portraits, Painted Hundreds of years ago, in Oil and Water Colours, they are as distinct now as if they were Painted but last year.

The Artist will attend at the residence of Gentlemen at any time required, if pleased to favour him with their Patronage. Children's Likenesses taken from 3 months and upwards.

N.B.—The Artist begs leave to say that he will call and show Specimens.

UNFORTUNATELY, the modest artist's name and address is not on the slip, consequently we cannot give him bold advertisement, but if he should happen to see these lines, we can assure him that if he will call he will find a few from the many he seeks to paint anxiously waiting for him. He says that photography makes the mouth large. Evidently from the above, nature has provided him with a mouth of abnormal proportions well calculated to blow his own trumpet.

WE note that the following awards have been made at the World's Fair, Chicago—F. Darton and Co., for meteorological instruments; Riley Bros., for lanterns and slides; Ross and Co., for lenses, field-glasses, and instruments; W. Watson and Son, (1) mathematical, astronomical, surgical, and English instruments, (2) lanterns, (3) photographic lenses, etc.; and R. and J. Beck for photographic apparatus.

WE have been obliged to curtail our abstracts "The Month," in order to avoid crowding out a lot of matter which is pressing, though this last month has been somewhat bare of new work, photographers generally being holiday-making.

WE publish this week the preliminary notice of a new method of treating gelatino-chloride paper, lantern-plates and opals, which has been introduced by the Paget Prize Plate Company, which certainly marks an important advance in printing. We hope to publish fuller details shortly, when the final treatment is decided on. The actual process perhaps may be more accurately described as a modification of the method of developing chloride papers suggested by Lainer, but the modification is so important as to merit the application of the term new.

A LETTER in our correspondence column last week called attention to the difficulty sometimes experienced by users of cut rollable films in keeping the same flat whilst developing. There are metal frames specially prepared for holding films whilst developing, but these are not always handy, and possibly the following plan which we have used may be useful. We obtain four fairly large corks, those known as Daffy's, and cut a slice about a quarter inch thick off the top of each and stick the ordinary knitting-needles into the sides, so as to form a parallelogram, and then pin the film by its four corners down on to the cork with drawing-pins, straining it as flat as possible. These have acted perfectly so far, though only make-shifts.

IN our last issue we commented on the instruction classes at the People's Palace and Polytechnic. This week we have received the programme of the winter session of the Photographic School at the Borough Polytechnic Institute, which is close to St. George's Circus, S.E. Here under the tuition of Mr. A. W. Dollond and Mr. Geo. Elliott a well-planned course, which commences on October 6th is offered to Londoners south of the Thames.

A UNIVERSAL international and colonial exhibition is to be held at Lyons, France, next year from April 26th to November 1st, which, according to the circular we have received, has the unanimous support of the Press of all kinds and of the whole of France, the authorities of all orders, departmental governments, the military, the law, universities, mayoralties, and commercial circles. Class II. in this exhibition is devoted to photography, and includes prints, apparatus, and processes of photography; photographs on paper, on glass, on wood, on textile fabrics, on enamel, etc., photogravures, photo blocks stereoscopic views and stereoscopes. Enlargements; heliochromic prints. Instruments, apparatus, materials, and processes for photography and for photographic studios. A jury will be appointed for professionals, one for amateurs, and one for apparatus, etc. The admission fee for leave to exhibit is twenty-five francs, besides certain charges for space, and an extra charge for those wishing to sell. Communications must be addressed to M. J. Claret, Concessionaire-Général de l'Exposition, Palais Saint-Pierre, Lyons, France.

THE Congress of the Photographic Society of Great Britain and Affiliated Societies will be held on the 10th, 11th, and 12th of October. The meetings, a programme of which we have already published, will be held as follows:—

Tuesday, 10th October, 8 p.m., at the Gallery, 5A, Pall Mall East.
Wednesday, 11th October, 3 p.m. and 8 p.m., at the Theatre, Society of Arts, John Street, Adelphi.
Thursday, 12th October, 3 p.m., at the Theatre, Society of Arts, John Street, Adelphi.
Thursday, 12th October, 8 p.m., special lantern night (admission by ticket only), at the Gallery, 5A, Pall Mall East.

PHOTOGRAPHY WITH MAGNESIUM.

MAGNESIUM was first obtained by Davy from its oxide by electrolysis. It occurs abundantly in nature in combination as oxide, carbonate, borate, phosphate, and especially also in combination with silica; in sea water as chloride; as sulphate in various springs. The metal itself, which is silvery white, tolerably hard, has a very low sp. gr., 1·7, and is obtained from the melted chloride by electrolysis, or by fusing with metallic sodium. Commercially it is met with in the form of bars, ribbon, wire, and powder. In dry air it is not affected, but in moist air it soon oxidises. When heated either in air or oxygen, it first glows and then burns with a blueish-white dazzling flame and dense white clouds of smoke—the latter being the oxide MgO—are formed.

Bunsen and Roscoe * first suggested the use of magnesium wire as a convenient source of light for photo-chemical investigations, and stated that the sun at the zenith had only 36·6

* *Philos. Trans.*, vol. 149, 1859, p. 920.

times more chemical brightness, and 524·7 times more visual brightness than magnesium wire.

Sir W. Crooks * (then Mr., and Editor of *P. N.*) stated that he had been experimenting with magnesium for some time, and hoped shortly to publish his results. Bunsen and Roscoe's paper was read May 26th, therefore they have priority of publication at least.

In a brief note on the "magnesium light,"† after describing magnesium and its properties, the following passage occurs :— "It is plain that it only needs a mechanical device to spin magnesium when heated into the form of a thread upon spools, from which they can be run off like the strips of paper in Morse's telegraphic apparatus, to render it of practical use. Such a magnesium lamp-wick would be far more simple and complete than the preparations for the use of the electric or the Drummond light. A spool with its thread, a clockwork to wind it off, with the spirit lamp, would be easily transportable. In photo-chemic experiments and in photography the excellence of the magnesium light is most conspicuous, as, according to Bunsen's estimate, the photo-chemic power of the sun is but thirty-six times greater. It can, therefore, be used with great advantage in photographing by night or in dark subterranean apartments. For the photographer, notwithstanding the high price of the magnesium thread, it can already be turned to account by reason of the shortness of the time during which the thread needs to be kept burning."

In "Scientific Gossip"‡ Fryer's experiments of mixing calcined magnesia and sulphate of lime for use with the oxy-hydrogen jet is described, but, beyond stating that "its effect was striking," there is no record of photographs being taken by it.

Crookes§ is stated to have made the first photographs by the aid of magnesium.

In 1864, Brothers, of Manchester,‖ in company with Sir Henry Roscoe, took a portrait of Faraday.

In July, 1864,** H. W. Vogel also successfully used it for portraiture. Mr. Sydney Smyth is stated to have successfully applied it for enlarging to the solar camera.††

In fact, during and after 1864 notices in the journals of those times of the use of magnesium as a photographic light source, are as thick as autumnal leaves in Vallambrosa, for improved processes of manufacture had reduced the price in this year; we can but cursorily therefore give further historical data.

Dr. R. L. Maddox used it for photomicrography in 1864. Piazzi Smith in the following year used it for illuminating the interior of the Pyramids. Nadar, of Paris, Leth. of Vienna, Reissinger, and Mariot also used it for interiors of caves and underground passages, etc. Albert, of Munich, used it for illuminating oil paintings, frescoes, etc.

Traill Taylor, in 1865, used what was practically the first flash-light mixture for portraiture; he used a mixture of powdered magnesium, potassium chlorate, sulphur, and antimony sulphide, but in those days the slow wet-plate process was not one calculated to give satisfactory results, and therefore the use of this powder did not become general. It is interesting to note this fact, however, as a mixture of this character was patented twenty years later.

In the following year (1866) Larkin mixed magnesium powder with fine white sand, and the mixture being placed in a large metal funnel ran through an aperture at the bottom, where it was mixed with coal gas and then burnt.

Kenyon* also used a mixture of magnesium powder and potassium chlorate, but it was not till 1886, when Gaedicke and Miethe patented a mixture, which, as we have already noted, was first used by Traill Taylor, that very much attention was directed to this subject, a still further inducement to the use of this light being the still greater reduction in the price of the metal at this time.

T. N. Armstrong† suggested forcing pure magnesium powder by pneumatic pressure through a flame, and Harrison suggested the useless admixture of lycopodium.

* *Photo News*, 1859, p. 71, October 14th.
† *Photo News*, June 8th, 1860, p. 70.
‡ *Photo. News*, 1862, May 2, p. 207.
§ *Photo. News*, 1864, Mar. 18, p. 137. The editor, G. Wharton Simpson, says: "If we mistake not, Mr. Crookes was the first to practically apply this agent to photographic purposes, and we have seen prints from negatives taken by him two or three years ago with some of the first magnesium wire made in this country."
‖ *Photo. Journ.*, 1864, p. 5, Mar. 15.
** *Photo. Mittheil*, 1864, vol. i., p. 60.
†† *Photo. News*, 1864, April 1, p. 157.

Photographic Society of Great Britain.

THE PICTURES.

In our last issue we briefly commented on and commended the general appearance of the room; a more deliberate and careful study we have since made.

1, "The Young Musician," a carbon enlargement by the Autotype Company from a negative by G. and R. Lavis. As a piece of technical work this is very good, but the pose is stiff and set, the arms of the subject being particularly painful.

3, "'Mongst Mines and Miners," by J. C. Burrow. This with 72 has deservedly won a medal. The difficulties of photography in a coal mine with the lime and magnesium lights can hardly be appreciated by those who have never attempted it.

5, "Two Winter Views near Zermatt," carbon enlargements, by Sydney Spencer. Surely this snow is far too dirty and smoky-looking. How different to similar scenes of Mrs. E. Mains.

6, 7, 8, and 9, four platinum prints by Col. Gale, small and fine as all the work of this well-known worker; but certainly No. 9 pleases us most. The subject of twitch burning is not new, yet the treatment in this picture is excellent. No. 7 strikes us as being far too black for a sunrise.

10, "The Postman," by Robert Terras. If there is any fault to be found with this, it is the depth of shadow in parts.

11, "F. Goodall, R.A.," by F. Downer," an exceptionally happy bit of portraiture, though some may quarrel with the great contrasts.

12 and 18. Here we have studies of child life by Wm. A. Cadby. Both are bromide enlargements; both are pale and grey, and flat and poor. 18 takes a medal, but we cannot say why; probably for an artistic merit which was hidden from us; it certainly was not from technical points.

14, a bromide enlargement of descending clouds, by Wm. England, is noticeable for the fine rendering of the clouds.

23, "Against the Tide," by W. Dawes, is a soft little print of rather happy grouping, but it is questionable as to whether the water does not run uphill.

25, "Study," by Robert Terras, a very fine thing, well worth study, of the simplicity and yet fulness of interest; every wrinkled line tells its tale.

27 and 30, Two collotypes, by Emile Frechon, the latter taking a medal. For excellence of workmanship and perfection of collotype printing on rough paper these are particularly noticeable, and will well repay close examination; we should say that they are as good as anything yet done by this process.

28, "The Home of the Water Hen," by T. M. Brownrigg. This is skied, and therefore one has not such opportunity of examination, but taking it with others by the same workers we cannot help thinking it is a pity that he has left the old paths and entered the ranks of the new school.

31 and 44 are two of Mr. H. Stevens' well-known flower studies, but not so successful as usual, the former being wanting in gradation.

32—

"Glinted an instant on the rippling mere,
Then veiled his face behind the distant hills"—

by Lewis Cohen. With this picture we are by no means pleased; it is a striking and bold effect, but we cannot help saying that the tones outside the highest lights are far too dark.

29 and 33. Two carbon enlargements by the Autotype Company, from negatives by P. H. Emerson. The former is certainly inferior

* *Brit. Journ. Phot.*, 1883, p. 61.
† *Brit. Journ. Phot.*, 1887, p. 777.

to 33, "The Wherry." 31 strikes us as wanting trimming, but the effect is striking, and it would require some courage for any ordinary workers to tackle such a subject as this 33 we have an intense longing to possess; the play of light is exceptionally good, the distance, just softened down and indistinct, throws up the wherry into bold relief, and the strong light glancing over the palings on the left is exceptionally fine. Some may cavil at the mast rising straight and firm, but it is not obtrusive, as the trees behind it prevent it from cutting the picture in two, and possibly some may say there is too much water in the foreground, but the whole is so pleasing and so much superior to its companion picture, 31, that we accept even that.

35, "Football," a bromide enlargement by Harry Stephens, would not be missed had it been rejected, and the same might, without offence, be said of 39, "Trussing Hay," by E. S. Shepherd.

38, "Nine Interiors," by Miss Weaver Arding, are striking examples of work on Sandell plates.

40, "Omegna, Lake Orta," by J. A. Sinclair, medalled. A lake scene, with a distant mountainous shore, and a woman in the foreground kneeling down at the water's edge, close by a tree, which serves to throw the distance back; either a bromide enlargement or platinotype on rough paper. This is certainly pleasing, though the shadows are a little black.

42, "Abandoned," by J. H. Avery, is a good example of a picture made out of poor material; the treatment of the low, flat, marsh-like foreground is good.

45, "A Bivouac," by Lewis Cohen, an exquisite study, and certainly should have received recognition. The tones are low and the gradations good. It represents a scene with bare trees, a low light with a man stooping over a fresh-lit fire, with another figure on horseback looking on.

47, A moonlight view, by Captain Abney, is somewhat grey and flat, but will doubtless attract some attention from the fact of its being taken by moonlight.

49, "Down from the Hills," by B. Gay Wilkinson, represents a rather steep track down a hill-side, with a charmingly disposed flock of sheep, one of the very happy results this worker often favours us with.

50, 57, and 58, three of Mr. Dresser's well-known enlargements, of which the latter is most pleasing.

53-56, four rough carbon half-plate prints by Chas. Moss, a worker yet young in photography, but known to us by his successful work in our competitions. 55 takes a medal, but we infinitely prefer 54. This is an exquisite little bit, and the best we have yet seen of this worker's results.

51, "Sands of Iona—Twilight," by W. M. Warneuke, represents an "iron-bound" shore with two women carrying a creel between them. The figures strike us as somewhat stiff, but the whole is so soft and full of twilight that this can be overlooked.

63, "Brambles and Gorse," by G. Macdonald, is a good study in brown carbon.

69 and 70, some capital hand-camera work by J. A. Sinclair, which have some pretensions to be more than mere snap-shots.

71, some fine professional work by the brothers Lutzel; some more work by the same, but in carbon of different colours, being 84.

75-78, four portrait studies, in one frame, by H. S. Mendelssohn, which are silver prints and a treat and relief on account of the richness and warmth of colour and depth of shadows.

80 is a very fine carbon enlargement by the Autotype Company, but surely, on the whole, too dark.

74, 82, 83, 92-94. These are all by J. M. C. Grove. We have here evidently a worker of the advanced impressionist school, and we cannot congratulate him on the results shown. 74 is technically bad, and nearly every one is untrue in tone.

90 and 120. Why these are hung the fates only know. They are utterly unsuitable for Pall Mall, and far more suitable for the portico of some theatre.

88, 91, 98, and 99, all by J. Kidson Taylor, are in this worker's happiest style, and we certainly admire the soft warm tones he has obtained.

95, "Good News," by R. H. Lord. An old couple seated at a table, the old man reading a letter. The treatment in this is good, and the lighting soft and pleasing.

97, "A Conquest," by W. M. Warneuke, is again a good example of his style, though we prefer "Kelp Gathering" (113), by the same hand.

100. Some more of Mr. T. Birtle's well-known Manchester Ship Canal pictures, which are more than mere technically good prints.

101, "Whitchurch Church," by John H. Gear, is a fine enlargement of the interior of Stanmore, with Handel's organ, but there is just a tendency to hardness in it.

102, an evening scene, by E. B. Wain, is soft and delicate and far more truthful in tone than nearly all the other evenings in the exhibition. *(To be continued.)*

Flotsam and Jetsam.

THE history of "the magic lantern" furnishes a charming little illustration of the doctrine of evolution. At first nothing but a toy, it has gradually grown in dignity and usefulness till it now assists in elucidating matters which Fellows of Royal Societies desire to look into, and has become a really valuable educational agent.

THIS is largely due to the fact that photography has joined itself to it, and has made the preparation of slides and the extent of their subjects so much more easy and extensive. But now the process of development has gone still further, and the camera and the lantern combined have been pressed into the service of religion, or perhaps it would be better to say, of the pulpit.

IN America, indeed, that go-ahead country, photography has assisted the pulpit to a remarkable extent. One parson is reported, by hearsay only, it is true, and on no more credible authority, to have converted more than 300 people by means of a sermon specially illustrated with photographic lantern slides.

IT would be interesting to know a little more both about the parson and the sermon and the slides, but it is not vouchsafed to us. One can, however, well imagine the effect that would be produced when the lights were suddenly turned down and a picture blazed forth from the lantern at the pleasure of the parson. On the same authority as that mentioned above, it is reported that this effect can be attained by the simple act of pressing an electric button.

THE variety shows will have to bestir themselves if this sort of thing goes much further. It may do all very well for an American congregation, but it would hardly go down in this conservative old country, if for no other reason than that sleep during the sermon would thus be rendered an impossibility.

TALKING of sleep, there were some curious remarks quite recently in an American journal as to the latest fashion in photographic portraiture "way down in Kansas." It seems that ladies now are taken either in a suit of pyjamas or in their *robes de nuit*. The fantastic pen of the writer thus flourishes itself in describing the two modes.

FIRST, as to the pyjamas. "If my lady is inclined to be festive, she wears a suit of pyjamas, and has nothing thrown over her. Then she looks like a pretty boy, who, weary of frolic, has lain down to rest."

BUT this, though "fetching," is as nothing to the "sleeping photograph," wherein the sitter is arrayed in "the fullest of lawn night-dresses, with cascade of lace close up to her neck, frills of it falling about her wrists, one hand resting just beside her, and the other up under her head."

THERE have been many opinions expressed as to American ladies in general, especially by mammas on this side of the Atlantic, but these revelations of a St. Louis photographer will be likely to bring down on the heads of his fair sitters some further remarks of the well-known type of Bill Nye's language, we imagine.

AND he himself shall not escape, for he has been guilty of the criticism that "the most marvellous thing about it all was how few of the women had pretty feet, and how very difficult it was to make some of them understand that they couldn't sleep in a high-heeled slipper"!

ANCHORITE.

EDER'S HANDBOOK TO Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER I.

HISTORY.

THE application of gelatine as a vehicle for the silver salts in the negative process was published by Poitevin early in the year 1850. In this year he read before the Academy of Paris a description of a process which consisted of mixing gelatine with iodide of potassium and then sensitising in a silver bath. On the 30th of June, 1851, he read another paper on an improvement of this process, by which (with the aid of gallic acid) portraits could be taken in one to one and a half minutes.[1] Hadow described, in the *Journal of the Photographic Society* in May, 1854, an exactly similar process, but made use of sulphate of iron for development.

The first emulsion of silver salts in gelatine is mentioned by Gaudin. Gaudin had already stated, in his first notice on collodion emulsion, on the 20th August, 1853, that he had made similar experiments with albumen and gelatine.[2] In the year 1861 he described his process more minutely; he prepared an iodide of silver emulsion with excess of silver nitrate, which he developed with tannin or tannin and gallic acid.[3] On the 8th September, 1871, Dr. R. L. Maddox sent his first notice on the preparation of a gelatino-bromide of silver emulsion to the *British Journal of Photography*, and handed at the same time to the editor of this journal, Mr. Traill Taylor, several negatives, landscapes, views, etc.,[4] which had been prepared by the new process.

King gave on the 14th November, 1873,[5] a detailed description of the gelatine emulsion process, and introduced the washing out of the soluble salts from the emulsion. In the same number of this journal Johnston recommended that the soluble bromide be used in excess[6]. This point was recognised later as highly important and was as a rule adhered to in the preparation of gelatine emulsion in consequence.

The first gelatine emulsion was introduced commercially by Burgess in July, 1873; it was announced in the *British Journal of Photography* of the 25th July, 1873. The formula for his emulsion was never published. To him, however, belongs the credit of being the first to prepare a workable gelatine emulsion of good quality.

Kennet first introduced in 1874 the washed gelatine emulsion in the form of dry pellicles and placed them also on the market. He described his process in the *British Journal of Photography* of April 23rd, 1874.[7] Wratten and Wainwright described first in 1877, in the "Year Book of Photography,"[8] the pressing of the emulsion through a wide-meshed canvas into water, so that the little lumps formed would be very easily washed.

Bennett made a great advance in the preparation of a very sensitive gelatine emulsion, when he, on the 29th March, 1878, communicated the important observation that an emulsion gained considerably in sensitiveness by a continued digestion at 32 deg. C.[9] The taking up of the study of the new process by Monckhoven in August, 1879, was also of importance.[10] He pointed out that the increase of the sensitiveness of a bromide of silver emulsion by continued digestion was attended by a molecular change. He quoted the earlier assertions of Stas (1874) on this point, and made the important discovery that the change of the bromide of silver into the sensitive "green" modification was substantially hastened by means of ammonia. The ammoniacal method was especially improved by the author, through whose experiments in 1880 the method with ammonio-nitrate of silver was completed, and he made known in the same year the favourable influence of ammonia on the cooked emulsion, as well as of ammonia, carbonate of ammonia, and soda on the ripening of the emulsion without heat. In 1882 Henderson suggested the best method for the preparation of a sensitive emulsion without the application of heat.

In the year 1881 the so-called hard kinds of gelatine were produced at the request of the author (first by the gelatine factory of Winterthur), which, specially in Germany, found speedy use in the preparation of emulsions, and on account of their greater powers of resistance offered great advantages over the soft English gelatines.

Abney employed in June, 1879,[11] for gelatine emulsion the process tried a long time previously with collodion emulsion, of precipitating the bromide of silver separately, washing, and then emulsifying, but his method, however, has never been used. Abney's researches on the role played by iodide and chloride of silver in the emulsion, the means to increase the sensitiveness of an emulsion by standing in the cold, and many other circumstances than those mentioned, were of importance for the success of the processes. Schumann, by whom many important spectroscopic experiments were instituted, in 1882 called attention to the fact that iodide and bromide of silver digested together behaved more favourably than if each was prepared separately and mixed. This was at first strongly doubted, but later (1884) was spectroscopically confirmed by Dr. Eder.

The preparation of orthochromatic plates rests upon the principle of optical sensitising by means of dyes, which was discovered by Prof. Vogel in the year 1873. Such gelatine plates were first prepared by Attout and Tailfer, and they took out a French patent (1882) for plates dyed with eosin. This subject was studied by Schumann (1883) and Prof. Vogel (1884), who was the first to prepare in Germany colour-sensitive plates under the name of "azalin plates." Dr. Eder has studied since 1884 the preparation of orthochromatic gelatine plates, and discovered in that year the especial favourable action of erythrosin as a sensitiser for green and yellow, which dye was repeatedly tested by Drs. Mallmann and Scolik, and others, and its use became general.

For developing, alkaline pyrogallol was exclusively in use; the ferrous-oxalate developer suggested by Dr. Eder came into frequent use in 1879. In the year 1882 Berkeley introduced sulphite of soda, and in 1883 Dr. Stolze suggested potash in the pyro developer, in the year 1887 hydroquinone, already tried by Abney in 1880 as a photographic developer, forced its way into general use.

Photography with gelatino-chloride of silver with development was discovered and described by Dr. Eder and Pizzighelli. It forced its way first in England through

[1] *La Lumière*, 1851, vol. 1, p. 89.
[2] Gaudin says, "J'ai fait des essais analogues avec l'albumine et la gelatine. M. Humbert de Molard m'a dit avoir eu des resultats avec l'albumine."
[3] *La Lumière*, 1861, vols. 21 and 25.
[4] *Brit. Journ. of Phot.*, 1871, vol. 18, p. 422.
[5] *Brit. Journ. of Phot.*, 1873, vol. 20, p. 542. Later more complete, vol. 21, p. 294.
[6] *Brit. Journ. of Phot.*, 1873, vol. 20, p. 544.
[7] *Brit. Journ. of Phot.*, 1874, vol. 21, p. 291.
[8] "Year Book of Phot.," 1878, p. 108.
[9] *Brit. Journ. of Phot.*, 1878, vol. 25, p. 146.
[10] *Bull. Soc. Franc.*, 1879, vol. 25, p. 204.
[11] *Journ. Trans. Phot. Soc. Gt. Brit*, vol. iii., p. 59.

Cowan's work (1883), and Scolik (1883) continued the experiments; Dr. Just, of Vienna (1884), and somewhat later Warnerke prepared gelatino-chloride of silver paper for the positive process in large quantities.

Further historical details will be found interspersed in the text of the accompanying treatise. A complete history of the emulsion process would carry us too far at this point.

CHAPTER II.

THE NATURE AND COMPOSITION OF THE SILVER AND HALOID COMPOUNDS AND OF AMMONIA.

(I.) MUTUAL DECOMPOSITION OF HALOGENS AND THEIR SALTS.

IN the preparation of gelatine emulsion the double decomposition of the halogen compounds (that is to say, compounds of bromine, chlorine, and iodine) with other substances is very often made use of.

The preparation of bromide of silver itself takes place by such a process, namely:

KBr	+	$AgNO_3$	=	AgBr	+	KNO_3
Bromide of potassium		Silver nitrate.		Bromide of silver.		Potassium nitrate.

Frequently it is desirable to have accurate knowledge as to how the elements chlorine, etc., act on bromide and iodide, etc.; in other words, what the affinities of iodine, chlorine, and bromine are

The following tabulation gives an explanation of the same:—

Chlorine decomposes metallic bromides and sets free bromine.
" decomposes metallic iodides and sets free iodine.
Bromine decomposes metallic iodides and sets free iodine.
" does not decompose metallic chlorides.
Iodine does not decompose metallic chlorides nor bromides.
Hydrochloric acid quickly decomposes bromide of potash, etc., and sets free hydrobromic acid.
" " quickly decomposes iodide of potash, etc., and sets free hydriodic acid.
" " decomposes bromide and iodide of silver with great difficulty (only at 700° C.).
Concentrated aqueous hydriodic acid converts chloride of silver into iodide.
Solution of potassium chloride alters neither bromide of silver nor iodide of silver.
" " bromide gradually converts chloride of silver into bromide of silver.
" " bromide does not decompose iodide of silver.
" " iodide converts bromide as well as chloride of silver into iodide (especially when warmed—see Chapter IX.).

Chloride and bromide of silver dissolve in caustic ammonia, the former more readily. Iodide of silver is almost insoluble. Chloride of silver dissolves in solution of carbonate of ammonia; bromide of silver very little; and iodide of silver not at all. If one adds a mixture of iodide, bromide, and chloride of potassium to silver nitrate, iodide of silver is formed first, then bromide of silver, and towards the end only will the chloride of silver be precipitated. Fluoride of potassium remains unaltered by the addition of silver nitrate.

(II.) THE PROPERTIES OF THE MOST IMPORTANT SILVER COMPOUNDS.

(A) Silver nitrate ($AgNO_3$) forms transparent white crystals; one hundred parts dissolve in about fifty parts of water at ordinary temperatures and in ten parts of boiling water; in alcohol it is more difficult to dissolve. The watery solution keeps for a long time in the light. In the presence of gum, sugar, gelatine, etc., the solution of silver nitrate becomes coloured in the light from reddish brown to black. However, such mixtures keep fit for use quite well in diffused daylight for one or more days; but it is better to keep in the dark any jelly containing silver nitrate, which is used in certain emulsion processes, although the yellow colouration has not much influence on the result of the preparation of the emulsion. By heat a mixture of pure gelatine and solution of silver nitrate is soon coloured yellowish brown; if, however, a little nitric acid be present, or if the silver nitrate has been mixed with excess of ammonia, the liquid remains clear.

(B) Ammonio-oxide of silver is formed by dissolving silver oxide (precipitated by caustic potash) in ammonia. This liquid is, however, at present not used in photography (compare Chap. VI.).

On the other hand ammonio-nitrate of silver is frequently used. It can be formed by adding ammonia to a solution of nitrate of silver, as long as the dark-brown precipitate first formed is redissolved by the addition of more ammonia to a clear liquid (for processes founded on this see Chaps. VI. and XVII.). If the solution be allowed to crystallise, colourless needle-like crystals separate out, which blacken in the light and, according to Mitscherlich, have the formula $2NH_3.AgNO_3$.[1] In accordance with this formula, one molecule of nitrate of silver should be required for two molecules of ammonia, but practical experience teaches that concentrated and diluted solutions of silver require somewhat variable quantities of ammonia for the preparation of a clear solution.

By means of a dodge one can prepare clear solutions which are very poor in ammonia—namely, if a solution of nitrate of silver is divided into two parts, and the one converted by sufficient addition of ammonia into a clear solution, and to the other some nitrate of ammonia be added; on mixing both solutions a clear mixture is obtained, which contains only half as much ammonia as a solution prepared by the former method. Emulsions prepared with such solutions, in consequence of the small proportions of ammonia, are free from fog but less sensitive, and can be digested at higher temperatures; also, by solution of oxide of silver in nitrate of ammonia, ammoniacal solution of silver is obtained, which acts in the same way.

(To be continued.)

[1] According to Prescott, the following decomposition takes place:
$2AgNO_3 + 4NH_4OH = (NH_3Ag)_2O + 2NH_4NO_3 + 3H_2O$.
(*Berliner Ber.*, 180, p. 1,740). In accordance with this view, and the above suggested formula, one molecule $AgNO_3$ combines with two molecules NH_3, which for precise work need be alone taken into consideration.

Liverpool (Am. Phot. Assoc.)—A meeting took place on 28th ult., Mr. Paul Lange in the chair. Four new members (Messrs. C. A. Rawcliffe, E. C. Lowe, John H. Burns, and R. F. Soper) were elected. The event of the evening was a lantern lecture by Mr. Joseph Earp, "A Holiday in Normandy," illustrated by 160 slides taken by the lecturer and Mr. J. W. Swinden, both members of the association. The excellence of the slides and the really original description, enlivened by flashes of quaint humour, altogether made a most enjoyable evening, which was highly appreciated by a very large gathering of members.

Aston.—On 28th ult. Mr. S. Delicate gave a practical demonstration on lantern-slide making. The process of exposure by contact was well and fully explained and the slides were toned, and, after being dried in alcohol, were passed through a lime-lantern lent by Mr. Tylar, who also acted as chairman of the meeting. Questions and suggestions were readily taken up by the speaker, who then showed a splendid series of slides, placing them toned and untoned alternately to show the advantages or otherwise of toning. Some Norris collodion lantern plates were then distributed.

OUR LANTERN SCREEN.

A Monthly Supplement to the "Amateur Photographer."

Our Dissolving Views

LANTERNS will now be taken out of the cupboards and boxes where they have been reclining, dusted and generally furbished up, and many cameras will be put on one side. Dark and cold evenings are conducive to lantern shows, both public and private, and lantern-slide making will take the place of ordinary printing.

FOR the next three months our competitions are devoted to lantern work, and to save everybody tronble all the way round—competitors, editor, and post office—the entry forms are printed each week in some part of the AMATEUR PHOTOGRAPHER, generally on p. xv. The following are the dates and subjects of:—

Oct. 14th.—Landscape, with or without figure.
Nov. 11th.—Sea Pieces and River Scenery.
Dec. 14th.—Portraiture and Figure Studies.

AS in past years, winners of the Gold and Silver Medals in our annnal lantern-slide competitions, and past winners of the Silver Medal in our monthly lantern competitions are debarred. Nor do we allow a competitor to take a prize for a lantern-slide from a negative a print from which has been awarded a prize in any of our print competitions, unless the competitor has not been working lantern slide making more than six months.

OUR monthly competitions are intended for readers only, and are also intended for the encouragement of beginners, whilst our quarterly competitions are intended for the older hands as well.

WE have had a cnrsory glance through the slides contributed to onr Annual Competition, and we think they are quite up to the standard, and by the time this paper is in the hands of the bulk of our readers the judging will be over, and the result will be annonnced in our next issue.

ANDERTON'S stereoscopic lantern is a great success, and wherever it has been shown has attracted great attention and interest. We publish elsewhere a description of the principles involved. It is a success, notwithstanding the dictum of a well-known authority, who wouldn't go to see the show because he said it was not possible to see lantern slides stereoscopically. Another proof of the truth of the old saying, "Never prophecy till you know."

THE following is the itinerary of the AMATEUR PHOTOGRAPHER 1893 Prize Slides. As far as possible, we have endeavoured to meet everybody's wishes, and at the same time to save carriage, by allotting them to societies in towns close together. But that we must disappoint some is inevitable. All societies cannot have them on one day, and several late applications have still to be allotted:—

Oct.	10	North Surrey
„	12	Midland Camera Club
„	17	Arbroath
„	18	Brechin
„	20	Aberdeen
„	24	Newcastle
„	25	Tyneside
„	26	Haltwhistle
„	27	Carlisle
„	30	Durham
„	31	Bradford
Nov.	1	Lincoln
„	2	Uttoxeter
„	3	Shaw
„	6	Richmond
„	8	Southport
„	9	Liverpool
,	11	S. London
	14	Shrewsbury
Nov.	15	Chorley
„	16	Wigan
„	17	Settle
„	21	Yarm
„	23	Leigh
„	24	Halifax
„	27	Keighley
„	30	Bootham
„	30	Selby
Dec.	4	Birmingham
„	5	Burslem
„	7	Preston
„	8	Halifax
„	11	Darlington
„	13	Stockport
„	14	Barrow
„	15	Lancaster
„	16	St. Helens
„	18	Farnworth
„	20	Paisley
Dec.	21	Greenock
„	22	Gallashiels
„	28	King's Lynn
„	29	Gt. Yarmouth
Jan.	2	Fakenham
„	5	Braintree
„	8	Peterboro'
„	12	Nottingham
„	15	Burton
„	16	Crewe
„	17	Leamington
„	19	Bristol
„	22	Redruth
„	23	Penzance
„	25	Devonport
„	30	Cheltenham
Feb.	1	Hereford
„	3	Llanelly
„	9	Dublin
„	10	Belfast
„	13	Pudsey
„	14	Rodley
„	16	Holborn
Feb.	19	Pulborough
„	21	Faversham
„	23	Lewisham
„	27	Warrington
Mar.	1	Dundee
„	5	Birkenhead
„	8	Woolwich
„	10	Corbin Inst.
„	12	Guildford
„	13	Lewes
„	14	Brighton
„	15	Sutton
„	20	Hackney
„	21	Eastbourne
April	4	Greenwich
„	11	Gosport
„	13	Widnes
„	16	Beverley
„	20	Hull
„	21	Leeds
„	24	Loughborough
„	26	Sheffield

ANDERTON'S STEREOSCOPIC LANTERN.

ON the 29th ult. a private demonstration of the above was given to members of the press, at Pall Mall, under the auspices of the P.S.G.B.

Numerous experiments have been made to enable a large audience to see stereoscopically pictures projected on a screen, but we believe that this is the first successfnl demonstration given in England.

The subject is one which is not easy to nnderstand without full diagrams, but we must try and explain it as simply as possible without the same, as we have not, unfortunately, had time to prepare them.

In the stereoscope the great principle of relief is obtained by the right eye seeing the right-hand picture, and the left eye the left-hand picture. To make this more clear, we quote the following from Mr. W. I. Chadwick's "Stereoscopic Manual," which puts the case very clearly: We will suppose a photograph to be taken of a square box. We should produce an outline such as would be seen by one eye placed in the position of the lens. Now, by removing the camera to a position two and a half inches to one side, we should produce another outline, and we see more of one side than is shown in the previous picture. Then, of course, these pictures are not alike, and if we cansed them to overlap they would not coincide, and we should still see two different pictures, for they could not be united as one. If, now, the reader will "use his reason rightly" he will be able to comprehend the fact that if these two dissimilar pictures—pictures such as would be seen in nature by each eye—were to be presented to each eye at the same angle of convergence that would be necessary when both eyes were used in viewing natural objects—that is to say, if the pictures were placed side by side (at suitable distances) and the right eye photograph viewed with the right eye, and the left eye photograph viewed with the left eye, the brain would combine them, and we should see only one as in nature; and if these conditions were fully and correctly observed, we should perceive the same solidity and relief from the pictures that is due to binocular vision when observing natural objects."

Having explained thus far we may now proceed to explain the principle of Anderton's stereoscopic lantern. An ordinary stereoscopic transparency is cut in two and each half mounted as a lantern slide, and the two images projected from an ordinary biunial on to a screen. Now these pictures are dissimilar, as pointed out above, that is, one is a right eye (we use this term to make it clearer) picture and the other a left eye picture, and, therefore, they cannot be made to coincide, and the result is more or less of a jumble. The thing that is wanted now is some means of enabling each eye to pick

out its own particular picture, and how this is done we can only explain by digressing again on to the subject of polarised light.

There are certain bodies in nature which have a peculiar action upon light. Iceland spar is such a substance, and it has the peculiar property, when a beam of light passes through it in any direction save that of the optic axis, of always dividing the light into two beams of equal intensity; and when either of these two half-beams is sent through a second piece of spar, it is usually divided into two beams of unequal intensity; and there are two positions of the spar in which one of the beams vanishes altogether. On turning the spar round this position of disappearance, the missing beam appears and the other one becomes dim. The following figures may make this plainer. Let fig. 1 represent two bits of spar placed one on top of the other, with their axes, represented by the central line, parallel. Light readily passes through these, but let us see what will happen if we turn them round first as in fig. 2, and finally in fig. 3. In fig. 2 this light begins to get dim; as represented by



FIG. 1.

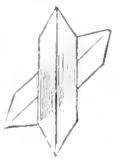


FIG. 2.

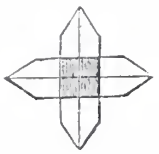


FIG. 3.

the shaded portion in fig. 3 it is quite black or no light passes through at all. The light is polarised.

Unfortunately, Iceland spar is not now to be had in any size pieces without flaws, so that we have to look about us for a substitute, and this is found in glass. If a bundle of thin colourless glass plates—the number is not of very great moment—be bound together and placed at a particular angle, which is 54° 35′ to a beam of light, the bundle of plates acts like Iceland spar, and polarises light perfectly, and therefore if we place another bundle of plates with its axis parallel to the first as shown in fig. 1, light will pass through without any trouble, and if we turn the upper bundle, the light gradually goes through the phases of figs. 2 and 3.

With a powerful beam of light it is not essential, to show this phenomenon, that the glass plates be in contact; in fact, provided the beam is powerful enough the distance between the two bundles of glass plates is immaterial. The crystal of Iceland spar, or bundle of glass plates through which the light first passes is called the *polariser*; the second crystal, or bundle by which the light is examined is called the *analyser*.

Now possibly, having cleared the way, we may be able to explain Anderton's stereoscopic lantern. It is an ordinary biunial, fitted with lime-light, and, as stated above, an ordinary stereoscopic transparency is cut in two, and one half placed in each lantern. On the front of the objective is slipped a short tube containing a bundle of glass plates. We believe that Mr. Anderton uses about thirty plates, placed at the polarising angle, and in front of the bundle is an aperture, oblong, with 1-in. sides; this forms the polariser. In one polariser the plates and aperture are put as shown in fig. 4, in the other as shown in fig. 5.



FIG. 4.

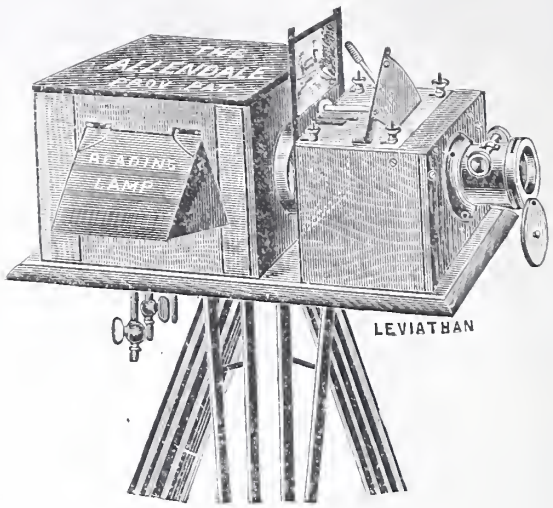
FIG. 5.

The images are projected through these in the ordinary way on to the screen, but, as stated above, will not coincide. The observer is provided with a lorgnette, which is also provided with analysers, which are merely the bundles of glass, and these are placed in exactly the same way as the polarisers, as shown in figs. 4 and 5, and the picture projected through the vertical polariser fig. 4 is viewed through the analyser of same direction, and the same applies to the picture projected through fig. 5.

The success of the working of the lantern on Friday was certainly striking, and this was not so good as it will be later on, because of the screen. It is a curious fact that nearly every substance that reflects light also polarises it, except metals, and the consequence is that Mr. Anderton is obliged to use silver foil as a screen, and very well it acted. R. Field and Co., of Suffolk Street, Birmingham, are the makers of the lantern.

THE ALLENDALE LANTERN.

By the courtesy of the manufacturers we are able to present our readers with an illustration of the above which is now being exhibited at Pall Mall. It presents several features of new construction; the reading lamp is at the side, and the gas tubes project through the lantern bottom. The slide is placed in the metal frame shown



and the handle turned over, and the slide instantly changes place with that in front of the condenser, a brass or celluloid screen; also shown, being raised and lowered between slide and objective. The lantern is mounted on a stout tripod, and it will be a useful assistant to the lecturer who wishes to work his own lantern. It may be obtained from all dealers.

How to Make Lantern Lectures Popular.

BY F. H. SMITH.

THE ordinary amateur who uses his hobby as a means of obtaining records of places he visits, of current events and social life, is practically, when prints from his negatives have been taken, at a loss to know what to do further. A print from each negative, whether framed for wall decoration or for an album, is about as much as most of us can do, or wish to do. We cannot ask our friends to be for ever looking at collections of prints, too often, unfortunately, of decidedly low standard, and certainly not more than one or two at most can look through an album at once. But suppose, as well as making prints, we make lantern slides, we are in a position to amuse a crowd more or less great at once. Further than that, a lantern slide from a negative, which may in itself possess actually no artistic merit, can, by a clever description, a joke, or a racy bit of dry humour, be at once converted into a telling picture.

So many of the public can tell at once a good print when they see it, that not all the proverbial kindness of one's friends is sufficient to hide the fact that, no matter what they say, they are bored by your second-rate work. But set the same public in a darkened room and show them lantern slides, with which they are not so familiar, and you can keep them amused for some time without much trouble.

Most of us get away during the summer and expose some plates, which we can utilise for making lantern slides; and there are few who cannot string together some sort of description of their holidays. If it is not in their power to be original, then it certainly is in their power to crib, beg, borrow, or steal something from somewhere. There are always guide-books to be bought or borrowed, or county directories from which stray crumbs of descriptive matter can be picked up, though the same may not always be correct. Nor are guide-books always to be relied on. Whatever you do, don't make your lecture too heavy, don't cram too much educational matter in it, put a little leaven of frivolity, and even a spice of wickedness does not go amiss sometimes. A joke, even if it is borrowed from a paper—the less known and the smaller the circulation of that paper the better as a rule—and even if it is dragged in by the skin of its teeth, to use a metaphor, is a relief sometimes, and if you can make a joke against yourself, as a rule it is not hard to do and generally goes down well, but whatever you do don't hesitate, don't have a "wait," but get on somehow.

Then again, with a little ingenuity you can drag all sorts of things into your lecture. For instance, supposing you show a slide of an old abbey ruin, get in the proverbial joke about how these old monks

used to enjoy themselves, throw on the copy of a picture or a chromo even showing them with their glasses, quote Ingoldsby's "Lay of St. Nicholas." If you get a good dark interior put in a ghost; every amateur knows how to do this. For descriptive poetry, Ingoldsby and Hood are bad to beat. If you can get a set of Hood's "Comic Annuals," by all means do so; here there are plenty of humorous sketches which can be used for all sorts of purposes; in fact, from the illustrations alone a good lecture might be made, and many of the illustrations can be connected with current events, although drawn sixty years ago.

Taking a more serious view of the lantern, good lectures can be made by taking up one particular subject, and making lantern slides of illustrations from standard books on the subject. It is wonderful how easily you can please a mixed audience in this way. Almost every dealer too advertises for loan slides on almost every conceivable subject, astronomy, sound, light, heat, cathedrals, foreign countries, slum life, and very little trouble is required to make a reading for the same. I have a firm belief in the lantern as an amusement, and I hope we shall see more and more use of it made in this way.

No. 52. MONTHLY COMPETITION.—CLASS I.

POWELL, F. (Dunoon).—"Milport." Taylor and Hobson, *f*/11; August, strong light, 2 o'clock; Edwards' Iso.; Solio, platinum toned; Clifford hand-camera. Our reproduction does but scant justice to this exquisitely soft little picture, but it is a good example of the higher use of the hand-camera than mere snap-shooting.

EYRE, H. S. W. (Crowborough).—"The Coming Storm." Shew's Eclipse hand-camera, R.R., *f*/10; September, sunshine, 4 p.m.; Lumiere; platinotype. "This picture illustrates the last gleam of sunlight before the severe storm in September last." The light and shade in this negative is very fine, and whilst not too dark, is just low enough in tone to give one the idea of a coming storm.

HIELD, J. H. (London).—"Smoky Tyne." Wray's R.R., 5 in., *f*/11; 1-64th sec., August, weak sunlight; Ilford; Mezzotype. A charming little bit from a quarter full of smoke, the idea being intensified by the tone.

SILLARS, MISS M. (Glasgow)—"Poteath Shore." Taylor and Hobson's, *f*/8; July, dull, 4.30 p.m.; Paget xxx.; Ilford P.O.P. An exquisite little pastoral, delicate and soft in tone.

DAWES, W. (Plumstead).—"Against the Tide." Crouch R.R., *f*/8; about 1-50th sec., June, sunshine, 2.30; Edward's iso; platinotype. A very fine effect; the grouping decidedly happy.

DEAN, S. (Huddersfield).—"Landscape, near Morecambe." Wray's 5 by 4 R.R., *f*/11; 1-20th of a sec., July, good light, 5.45 p.m.; Ilford ord.; Ilford P.O.P. A little too black on left hand, and wants clouds. Printed on rough paper, a good thing might be made of this.



SILVER MEDAL. "Milport." *F. Powell*

PREEDY, D. W. H. (King's Norton).—"Our Maggie." Griffiths' hand camera, *f*/16; 1-20th sec., spring, sunlight, morning; Marion Solio; Powell's compressed; gold toning bath. A capital cow study.

POST, W. B. (New York).—"Pasendena Landscape." Ross, *f*/16; inst., February, soft but fairly strong light, morning; Eastman's film; platinotype; oxalate cold bath. Just a little bit flat, and too much foreground.

DART, W. B. (Bridgewater).—"Outward." Wray, *f*/11; inst., July, fair, afternoon; Paget xxx; Ilford P.O.P. Slightly overprinted, but an exceptionally pleasing shot.

EPPS, J. (Upper Norwood).—"Romsdal Horn." Taylor, *f*/8; inst., 1-25th sec., August, bright light with low broken-up clouds, about 10 a.m.; Edwards' Isochromatic; Ilford bromide paper. Just a little too black and white; with dodging, could be much improved.

ANDERSON, J. H. (London).—"A Stormy Sunset." Crouch, *f*/8; 1-16th, May, fair for time of day, 6 p.m.; Edwards' Iso. inst.; cold-bath platinotype. A charming result, which ran hard for third place.

SMITH, J. K. (Yorks).—"Old Cornhill, Bramhope, near Arthington." Taylor and Hobson, *f*/16; 1-20th sec., April, very fair light, 1.15 p.m.; Barnet; Eastman's Solio matt-surface; phosphate of soda and chloride of gold, and pinch of chalk. The enclosed picture was taken by a home-made reflecting hand-camera, the clouds were printed in from cloud negative. A very fine study.

DAVIS, T. (Clevedon).—"Yachts starting for a Race." R.R., Kodak, *f*/17; inst., July, cloudy, diffused light, 3 to 4 p.m.; Eastman's film; home-prepared paper; platinum and acid nitric. A good thing spoilt by the water running up hill.

PEARCE, N. (Cambridge).—"Sand and Water." Granta hand-camera, *f*/16; 1-30th sec., August, cloudy, 11.30; Castle; Solio. Delicate and soft as this is, yet one feels that the interest is somewhat scattered.

FORREST, H. (Liverpool).—"Homeward Bound." Griffiths' R.R.; 1-20th sec., July, bright, 2 p.m.; Castle; Solio. A capital shot; a study of sheep on the road home, preceded by dog and followed by shepherd. Utterly spoilt by overprinting. One would almost suppose it to be midnight.

CLARK, MISS CH. (Addiscombe).—"By the Wayside." Wray's R.R., *f*/11; 1-16 sec, sun under clouds, 4 p.m.; Fitch films, P.O.P. Cattle drinking in a stream or pond. A small print, 2¾ by 2in., good in grouping, but over-toned and rather flat.

PORRITT, A. F. (Bingley).—"Wharfedale." Wray's R.R., *f*/11; 1-15th sec., August, sun, 1.30 p.m.; Paget xxxxx; platinotype. A little too black and white, and clouds not distinct enough.

GARNER, A. H. (London).—"Threatening." Facile, R.R., *f*/11; 1-5th sec., August, diffused light, 2 p.m.; Ilford Iso. med.; P.O.P. Very low in tone, but a happy little bit of selection.

RUSSELL, J. (Uddingston).—"Patience." Taylor's D lenses, *f*/8; 1-10th sec., July, good light, 3.30; Eastman, matt chloride. An exquisitely soft little print, improved by judicious use of the knife.

All the above prints were selected by the judges as good, and the final selection was rather difficult.

CLASS II.

DAVIS, H. J. (Bristol).—"A Bit of Bristol." Good technically, but absolutely no artistic merit.

ARROWSMITH, H. E. (Sussex).—"Easter Monday Review." We had to pay 2d. for insufficient postage for this, and it was not worth it, the print is fearfully spotty.

CLAGUE, H. J. (Sheffield).—"Bay Yachts." Unfortunately, the horizon is all running uphill and spoils a pretty bit.

BOON, E. G. (Italy).—"Alassio." Spoilt by too many straight lines in it.

SMALLPIECE, M. (Windermere).—"A Calm Evening." Spoilt by want of trimming and water running up.

MCCLEERY, J. (Belfast).—"Evening." Untrue, too black in the foreground, and too bright a sky.

GRAHAM, E. (Pitlochry). —"Steamers on Hardanger Fjord." Very fine technically.

PERCY, T. B. (London).—"A Schooner Beaching." Spoilt by the top of masts being cut off; might be trimmed with advantage.

KEASLEY, J. (Reigate).—"Brighton Beach." Over-developed enormously.

GODFREY, P. (London).—"Sunset in St. James' Park." Untrue, too black, and surely the sun never sets over the India Office, though it may be Buckingham Palace.

WALKER, W. (Nottingham).—"A Stiff Breeze." Masking of the sky like this would spoil anything.

POTTER, W. R. (Teignmouth).—"Yachts at Torquay Regatta." Too harsh and brilliant.

WILLIS, Miss C. A. (Brighton).—"Cleeve Mill, Goring." Wants clouds and trimming down; exquisitely soft.

HARGOOD-ASH, W. (Torquay).—"Torquay from the Haldon Pier." Over-printed, shows blue stains, and more water running up.

STABB, J. (London).—"Low Tide." A very good thing indeed, spoilt by over-printing. The right hand far too black for the sun to be so high.

FRASER, W. (Surrey).—"Ship Preparing to Leave the Harbour."

STEWART, A. D. (Glasgow).—"Sunset at Sea." Yet another good thing spoilt by over-printing. No one ever saw such blackness with sun so high.

LEATT, H. (Jersey).—"In Shallow Waters." More over-printing spoils a charming study.

WEATHERSTONE, W. (London). —"Gossipping." Very natural, and but for the pink tinge we should have been inclined to put this in first class.

PRESTON, G. (Cornwall). —"Forder Mill." More over-printing.

ORTON, W. L. J. (Coventry). —"Low Tide." We should have been inclined to trim off at least half an inch from foreground, and the sand is a little too dark at right-hand side.

NYE, H. (London). —"Peel Harbour." Over-developed print, too heavy, and has too much foreground.

DAVIDSON, W. N. L. (London).—"Awaiting the Tide." A very good study spoilt by the misty effect over the boat.

WESENCRAFT, H. H. (Newcastle).—"A Fair Wind." Fearfully patchy and blotchy.

BIRD, J. J. S. (Chippenham).—"A Tit Bit at Dorchester." Wants a figure to break the line of the bridge.

ROSENTHAL, J. (London).—"Hyde Park Corner." Good technical work, but a snap-shot only.

HEWGILL, A. W. (Farnworth).—"The Hall, Holme." Ditto.

WATTS, T. (Colchester).—"Watching the Steam Roller." Flat, and a pity to cut off the men's feet.

LOUSTER, H. (Northampton).—"The Overshot." Too many straight lines; slightly over-printed, but it is real tumbling water.

CANEVALI, J. H. (Liverpool).—"A Yacht Study." Under-printed, and wants clouds.

PARKER, H. (Birmingham).—"The Young Anglers." A little too much foreground, and too patchy lights; too scattered.

BELLAMY, A. L. (Carlisle).—"Animal Study." A better print world have stood some chance, as it is a capital study, but trimming down wonld improve.

MALLINSON, W. (Dover).—"French Mail Boat leaving Dover." Flat and wants clouds.

MACMILLAN, M. (Rothesay).—"Cutting Corn." Rather too flat, and distance far too clear.

HARDING, G. (Stourbridge).—"A Quiet Drink." Over-printed, and over-toned.

WELCH, J. (Liverpool).—"Prince's Street Gardens, Edinboro'." A very fine piece of technical work, but not artistic.

ISAAC, H. O. (Bristol) —"By the Sea, Douglas." Just a little bit flat and wanting in brilliancy.



BRONZE MEDAL. "Smoky Tyne." *John H. Hield.*

PEDDIE, A. (Sunderland).—"Roker Sands." Negative too harsh and wants clouds.

BROCKHOLES, Miss M. F. (Garstang).—"What do you Want?" An amusing shot, but print flat and wants trimming down considerably.

BIRCH, F. E. (Manchester).—"Cattle Grazing." A nice little study, but spoilt by over-toning.

CLASS III.

RICE, E. A.—More uphill water, flat and poor.

GEDDIS, A. M.—Too harsh and the boughs too obtrusive.

LAWSON, A. M.—A snap-shot pure and simple.

SIMPSON, J.—More uphill water and too black and white.

LOWREY, A. T.—A poor thing, 'tis true, but mine own. Over-printed, flat, and shows fog.

THOMSON, W.—An over-printed snap-shot.

SCOTT, E.—More uphill water, and a dreadful yellow tinge all over it.

ISAACSON, J.—Over-printed and too much foreground.

BISSET, J.—Flat, and looks at first sight as though it was a cow with a church growing out of its back.

WITT, Miss M. C.—Too harsh; water far too white.

EWING, J. M.—More uphill water, and an unpleasant tone.

PEDERZANI, G.—Slightly over-toned and not sufficient interest in it.

SLATER, J. F.—Bad, over-printed, and shows development marks.

BROWNE, D.—Over-printed and not artistic.

CAMPBELL, A. J.—Over-printed and not artistic.

ALLEN, C. J. M.—Over-printed and not artistic.

CHILLCOTT, G. E.— Negative hard and much over-printed.

DAVIS, Miss A —Over-printed and over-toned.

BUSHBY, A.—Just a snap-shot.

MARRIOTT, E. L.—Purely a snap-shot.

HANDON, R. H.—Wants clouds and trimming down badly.

MARRIOTT, Mrs. M. E.—Spoilt by over-printing.

LUMLEY, T.—Not worth all the trouble you took. Negative too harsh and the print over-printed and a hideous pink tinge.

VULLIAMY, E. P.—Over-printed and a hideous pink tinge.

FRASER, W.—Too much foreground.

FERGUSON, T. — Yellow whites and sea runs up.

WOODS, P. E.—Very flat, and shows fog marks at bottom; would be improved by vignetting.

SIBTHORP, Rev. H. J.—We should have been inclined to have put this higher, and in second class.

THIND, W. C.—Already shows signs of blue patchiness.

DOWANHILL.—A very good snap-shot which we should place in second class.

MACULDROW, Miss F.—Spoilt by over-printing.

NORTON, J. L. P.—A snap-shot pure and simple.

BULLOCH, W.—Horizon not straight. See Editorial.

SHEPPARD, Miss A. H.—Fearfully over-printed.

BAMFORD, S. B.—Just such a photo as a beach photographer would take.

WHITEHEAD, J.—Negative we should think too hard, and not saved by over-printing.

GREEN, G. F.—Utterly spoilt by over-printing.

WETHERMAN, G.—Slight yellow tinge, and not artistic.

SALMON, P. R.—An unpleasant flatness, and the tone is not pleasing.

HENSTLEY, E.—Shows too evident signs of movement, and camera not held straight.

HENSTLEY, Mrs. M. E.—Flat and under-printed.

CHAMBERLAIN, G.—Fearfully over-printed.

ADAMS, J.—Absolutely uninteresting, and not good technically.

BALDWYN, Mrs. E. M.—Four young ladies' heads pushed through a newspaper can hardly be said to be artistic, and taken in sunlight too.

SANTY, A. De.—Too harsh in contrasts, and wants clouds.

LLOYD, J.—Too much foreground, and not enough sky.

A Suggested Improvement in the Correction of Lenses for Photo-micrography, Photography, and Photastrography.

By Henry G. Piffard, A.M., M.D.

Prior to the time of the late Col. J. J. Woodward, M.D., Surgeon of the United States Army, say twenty-five years ago, photomicrography was in its infancy. It is true that photographs of microscopic objects had been made, but they were crude and unsatisfactory, and were all made with what we call low-power objectives. Although the objectives then made were of excellent construction and well adapted to the revelation of the structure of minute objects to the eye, yet the photographs made with them were greatly inferior in clearness and sharpness to the virtual image appreciated by the retina. The cause of this was not far to seek, and was due to the lack of coincidence of the visual with the so-called actinic focus. At the period mentioned the art of photography was almost exclusively practised with the aid of collodio-iodide plates, which were very sensitive to the blue, violet and ultra violet (more refrangible), and but feebly sensitive to the green, yellow and red (less refrangible) rays. *Per contra*, these latter rays impress the eye so forcibly that the effect of the more refrangible rays is almost obscured—that is, when mingled with the others, as in ordinary white light. The practical outcome of this condition was that, when the ground-glass of the camera was in a position that gave the sharpest image to the eye, this image could not be duplicated as to sharpness in the developed photographic plate occupying the plane previously occupied by the ground-glass.

In order to obtain a sharp photographic image it was necessary either to shorten the anterior conjugate focus, which involved the veriest guesswork and was practically unavailable, or else to move the plate to a point nearer the lens where the actinic rays came to their posterior conjugate focus. This was perfectly practical, and by repeated experiment the relation of the actinic to the visual focus in a given lens could be ascertained. Although practical, this method was hardly satisfactory.



Bronze Medal. "The Coming Storm." *H. S. W. Eyre.*

In ordinary photography, the difficulty attending this difference in the natural positions of the actinic and visual foci had already been overcome by making the visual focus correspond with the actinic by constructing the lens so that it should be left in a state of moderate "under-correction," as it is termed by opticians.

Among the first to appreciate the value of this as applied to photomicrography, was Colonel Woodward, and the first opticians to give it practical form were, I believe, Mr. William Wales, of New York, and Mr. Ernest Gundlach, then of Berlin, but now for many years a practical optician in this country. This example was followed by Tolles, of Boston; Powell and Leland, of London, and others.

Woodward was one of the most accomplished microscopists, so far as the manipulation of the instrument was concerned, that ever lived. His skill in securing the virtual image and in projecting the real image was at that time equalled by few and probably surpassed by none.

With Woodward's skill and the possession of lenses specially adapted to his purpose, the results obtained by him were the wonder of the scientific world.

Since his time photomicrography has, in the main, followed the paths he marked out, and the improvements in the art since then have simply kept pace with the gradual improvement of the objective and especially in the direction of increased apertures. One notable advance in the technique, however, is Abbé's happy conception of the projection ocular.*

The collodio-iodide gave place some years ago to the gelatino-bromide plate, which, like its predecessor, is especially sensitive to the blue and more refrangible rays, and almost wholly insensitive to those which give the strongest visual impression.

In order to obtain the sharpest image on such a plate, the lens must of necessity be under-corrected, as already stated. In accomplishing this, however, there is a certain loss of visual excellence which, however, is of little moment in ordinary photography. That this under-correction of lenses for photomicrography results in an impairment of their visual excellence is well known to opticians, but has thus far received but little notice from the actual users of the lenses in question. A few recent writers, however, have directed attention to the matter.

Londe (*La Photographie Medicale*, Paris, 1893) says: "The first and most important question is the choice of objectives These may be excellent for observation and more than mediocre for photography."

Mercer (*Journ. Royal Micro. Soc.*, June, 1892), in speaking of some of the objectives used by him in photomicrography, says: "The Wales objectives are corrected spherically for the violet ray. The violet image is, therefore, somewhat superior to the visual, with which, however, it is coincident."

Czapski, in a letter published in Van Heurck's treatise on the microscope, London, 1893, says: "In every case the objectives specially constructed by opticians for photography can never be advantageously employed for observations, and inversely."

From the foregoing it will be clear that lenses which were best for visual purposes were not the best for photographic use, and it was necessary, therefore, when the most perfect results were sought in both departments, to have a double set of objectives, and many investigators did provide themselves with such an outfit.†

The inconvenience and lack of economy involved in this arrangement are manifest, but how to obviate it does not appear to have occurred to opticians or others interested in the subject.

Having been practically familiar with photography and photomicrography for upwards of twenty years, I have had the opportunity in that period to become reasonably familiar with the inherent defects of their technique, but it was not until the latter part of 1891 that I perceived that a way out of the difficulty might be readily found.

During the past five or six years the manufacturers of gelatino-bromide plates have placed on the market plates which are extremely sensitive to yellow light, and but feebly so to the blue, violet, ultra-violet rays of the spectrum.

If, now, the objective be corrected for yellow instead of for blue or violet light, the negative being made on one of these yellow-sensitive or so-called "orthochromatic" plates, there should be an exact correspondence of the visual and chemical foci, and the resulting picture should be superior to one that could be obtained by the ordinary procedures—that is, an under-corrected lens and blue-sensitive plate; and at the same time the objective would not have its visual excellence impaired, supposing, of course, that the optician performs his part of the work with care and skill.

* Peculiar advantages have been claimed in behalf of objectives constructed according to the so-called "apochromatic" system. These lenses, however, possess certain disadvantages which restrain me from giving them unqualified commendation.

† It must be admitted that some of the apochromatics of short focus (2 mm.) obviate, in a measure, this difficulty; but those of longer focus have not, at least in my hands, proved satisfactory.

In order to test the practical value of this theoretical reasoning, I requested Mr. H. R. Spencer, now of the Spencer and Smith Optical Company, of Buffalo, N.Y., to calculate the formula and construct a lens which would fulfil the stated requirements. The result was a lens of $\frac{1}{6}$ in. equivalent focus, and possessing a numerical aperture of 1·35. With this objective I have resolved and photographed the *Amphipleura pellucida* in lines, and have photographed both the *Navicula rhomboides* and the *Van Heurckia crassinervis* in lines and beads.*

In ordinary histological work, with amplification ranging from 200 to 400 diameters, the results with this lens have been very much more satisfactory than I have been able to obtain by any other combination of lenses or plates.

With a $\frac{1}{4}$ in. objective of the same construction, made by Spencer and Smith on the order of Dr. J. A. Fordyce, of New York, I have resolved the *A. pellucida* with white light, and have demonstrated the resolution to him and to others. With a $\frac{1}{15}$ in. of the same construction, the property of Dr. J. H. Kellogg, of Battle Creek, Mich., I made the photograph of the podura which accompanies this paper.

In order to further test the correctness of the principles involved, I requested Mr. Turner, of the Gundlach Optical Co., Rochester, N.Y., to make a $\frac{3}{4}$-inch lens of moderate aperture (N. A. 0·33). Considering the power, aperture and price (12 dols.), the lens gave very satisfactory results, and wholly confirmatory of the theoretical demand.

In using these lenses with yellow-sensitive plates, there is a distinct gain in definition and purity of image, both visual and photographic, if the object be illuminated with light of corresponding refrangibility (λ 5892). This may be obtained absolutely by employing a sodium flame, or approximately by intercepting the white light with a medium capable of absorbing the rays of short wave-length.

For the greater part of photo-micrographic work, and especially that which deals with histology, I unhesitatingly recommend the technique here described, which, briefly stated, consists in the use of objectives whose corrections shall be adjusted to the D instead of the G or H lines, and in connection with plates specially sensitive to D light, and having the object illuminated as near as may be with rays of the same refrangibility.

If, however, we have to deal with objects in which we must resolve or optically separate particles whose approximation to each other is less than, say, $\frac{1}{100000}$ of an inch, the foregoing statements do not apply.

The studies of Helmholtz and of Abbé have placed us in possession of a formula which appears to be theoretically and practically true, and may be expressed as follows:—

$$\text{R.-p.} = \frac{\text{n. x sin. u.}}{\lambda}$$

"R.-p." here indicates the resolving power of the objective; "n." the refractive index of the medium lying between the cover glass of the object and the front lens of the objective (be the same air, water, glycerine, or oil); "u." the semi-angle of the aperture of the objective; "sin." the natural sine of said semi-angle; and "λ" the wave-length of the light employed. Now the "numerical aperture" of the lens is equal to n. x sin. u., and the equation becomes simplified into—

$$\text{R.-p.} = \frac{\text{N. A.}}{\lambda}$$

From this it will be seen that if we desired to obtain extreme resolution, it is necessary to employ objectives of the greatest numerical aperture, and employ in connection therewith such visible rays as possess the shortest wave-lengths. For the photographic reproductions of such images blue-violet sensitive plates, with under-corrected lenses and approximately blue or violet illumination (Woodward's technique) will give the best results. At the present time Mr. E. M. Nelson, of London, is devoting special attention to the development of this branch of photomicrography.†

It will be noted that the formula above given does not take into account the equivalent focus or magnifying power of the lens; in other words, that this factor has no influence on the resolving power of the objective. This is correct. A well-connected 1-inch objective will resolve exactly as well as an equally good $\frac{1}{4}$-inch, provided the factors N. A. and λ remain the same. I here allude to this matter, as every few years someone imagines that he is on the verge of great discoveries, to be brought about by the simple feat of increasing the amplification of the image. Let us assume that a photograph be made with an amplification of 3,000 diameters, with N. A. the greatest and λ the least possible. This photograph may then be further enlarged to 30,000 or 300,000, but the enlarged pictures will not show any finer or more intimate structure than was delineated on the original smaller picture.*

Although orthochromatic or isochromatic plates have been regular articles of commerce for several years, they are used by practical photographers to a limited extent only. This is due to the fact that, despite the acknowledged superiority of the plates themselves, the negatives made on them with the lenses ordinarily at command have not yielded as satisfactory results in some respects as were obtained on the older blue-sensitive plates. The reason of this is almost self-evident. All ordinary photographic lenses at present constructed are under-corrected, and intentionally so, in order to make the visual image agree with that formed by the shorter wave lengths, to which alone the old-style plates are sensitive.

If, for any reason, the photograper desires to use orthochromatic plates, either for copying, for portraiture, or in general landscape work, the only rational procedure is to use lenses that are specially corrected for them. To carry out this idea the Gundlach Optical Co. kindly constructed an 8×10 in. "rapid-rectigraph" lens of 13 in. equivalent focus, corrected for the D instead of the G line of the spectrum. The performance of the lens has fully justified the induction that led to its construction.



CERTIFICATE. "Poteath Shore." *Miss M. Sillars.*

When orthochromatic plates first came into general use, the astronomers seized on them with avidity; but it was not long before they became dissatisfied with the results. At a recent astronomical congress in France, the sentiment of the majority of those present was that more faithful and satisfactory images of the heavenly bodies were obtained on the blue than on the yellow sensitive plates.

Little of value had been done in photastrography until the late Mr. Lewis Rutherford, of New York, produced some photographs of the moon which greatly surpassed any of the sort that had been

* As regards the last-named object, it has been previously photographed in beads, so far as I am aware, only by Van Heurck with the aid of a lens of higher power, 1-8th of an inch and much larger aperture (N. A. 1·60).

* Some months ago a friend, who is a sub-chief in one of the principal bacteriological laboratories, remarked to the writer that the height of his ambition was to possess and work with a Zeiss $\frac{1}{18}$ in. apochromatic. I replied that if he fancied Zeiss lenses he had better select a $\frac{1}{12}$ in., as with it he would be able to do more and better work in the line of research and discovery than with the $\frac{1}{18}$ in. My reply was evidently received with extreme incredulity. If we refer to Zeiss' catalogue we shall find that the numerical aperture of the $\frac{1}{18}$ in. is given as 1·18, but the $\frac{1}{12}$ in. of the same maker has a N. A. of 1·30. He makes still another $\frac{1}{12}$ in., N. A. 1·40. Applying these figures to the equation above given, and assuming for white light λ 5,269, we shall find that the $\frac{1}{18}$ in. will resolve or differentiate particles that approach each other as closely as about 114,000 to the inch, while the $\frac{1}{12}$ in. of N. A. 1·30 will resolve particles as close as about 125,000 to the inch, and the $\frac{1}{12}$ in., N. A. 1·40, will take optical cognisance of lines or particles that approximate each other to within about $\frac{1}{132,000}$ in.

previously accomplished with the refracting telescope.* Rutherford used a telescope with the objective so extremely under-corrected that it was almost useless for visual purposes. This lens, it is almost needless to say, was specially corrected for the shorter wave lengths, to be used in connection with wet collodion blue-sensitive plates, the only ones at that time available. Some astronomers employ a telescope corrected for best visual definition and a duplicate specially corrected for photography, and it is the latter that they have usually employed with the orthochromatic plates. The reason, then, that these plates have fallen into disfavour with many of them is due to the fact that they have used the wrong lenses with the right plates.

One of the principal advantages connected with yellow-sensitive plates is their ability to record the details of distant objects in a more satisfactory manner than is possible with the ordinary ones. Some four years ago the writer called attention (*Anthony's Photographic Bulletin*, February 9th, 1889) to the *graphotelic* properties of these plates in connection with landscape photography. If this special attribute of yellow-sensitive plates is of value in connection with distances limited by, perhaps, a score of miles, it certainly seems that it should not be overlooked by those who work their lenses with the anterior conjugate focus many millions of times greater than the posterior.—*Anthony's Bulletin.*

The A B C of the Lantern.

(*Continued from page* 336, May 19th, 1893.)

Condenser.—The object of the condensers of a lantern are to collect light which would otherwise be lost, and to condense the same that it may pass through the slide and through the objective. Reproducing these familiar diagrams may elucidate this point—

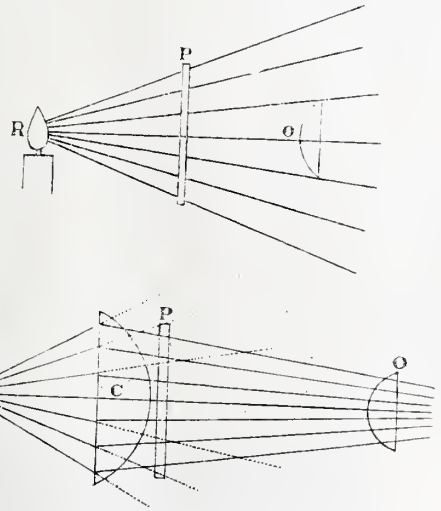


Fig. 1 shows the path of the rays of light from a radiant R, which pass through the slide P and the objective O, when a condenser is not used, whilst fig. 2 shows the action of the condenser in refracting the rays which would otherwise be lost, as shown by the dotted lines. The simplest explanation of the function of a condenser is by Mr. W. I. Chadwick, which, by permission, we reproduce.

When a beam of parallel light (A A, fig. 3) falls upon a convex lens, the rays will be bent towards the centre and made to converge approximately to one point *f*, which is called the principal focus.

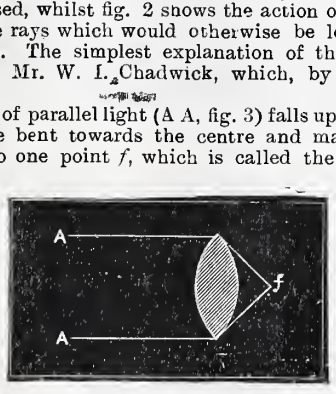


Fig. 3.

If, on the other hand, a diverging beam of light proceeded from a point at *f*, the rays could be traced back—that is to say, they would, after leaving the lens on the other side, proceed parallel to A A.

If the point of light be brought nearer to the lens than the principal focus *f*, as shown at A (fig. 4), the lens would have too much work to perform to send the rays parallel, and they would proceed from the lens still divergent as B B, though not as much divergent as before they entered the lens.

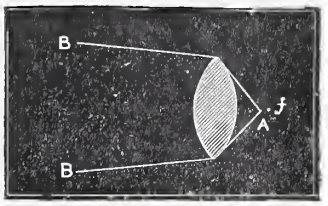


Fig. 4.

When the point of light is outside the focus, as at A (fig. 5) the rays on the other side of the lens will meet at some point B

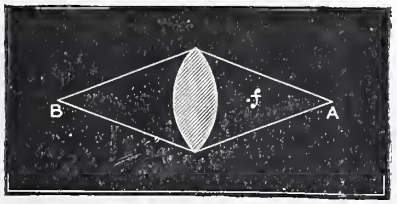


Fig. 5.

(approximately), and if the point of light be moved to B the rays would meet at A; so we see that A and B are reciprocal, and are called the conjugate foci; one having a distinct relation to the other. As the point of A (fig. 5) advances towards *f*, the conjugate B will move away from the lens on the other side, but not in the same proportions as A advances, for the longer focus always moves more rapidly than the shorter. If we assume the lens to be 3 in. focus, the conjugates A and B being equal, will be 12 in. apart or 6 in. from the lens on each side.

In fig. 6 we have caused the point of light A to be brought nearer to the lens than is shown in fig. 5, let us say to 4 in. The conjugate B has moved further away from the lens—to 12 in. (4 in.

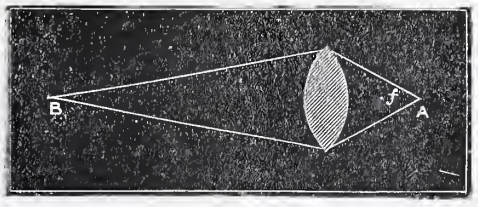


Fig. 6.

and 12 in. being the conjugates of a 3 in. focus lens), and if we move the point of light A still nearer to *f*, say to $3\frac{1}{2}$ in., the conjugate B will be found at 21 in. on the other side, and so on as A approaches the lens, B recedes, until at length when the point of light arrived at *f* parallel rays would be produced as shown in fig. 3.

The Functions of a Lantern Condenser.

Now, let us see how these few remarks apply to a lantern condenser. One important function in a condenser is to collect as much light as possible, and in passing it on through the slide, the rays now forming the picture must converge to a point somewhere in front, and that *somewhere* is in or about the centre of the objective in use—that is to say, the objective must be at B fig. 5, or at B fig. 6.

When a lantern and screen have been assigned to their respective places, there is only one position for the objective in use to make the picture focus on the screen, and as the conjugate B must meet in the objective, and, as has been shown, this conjugate has another conjugate A, which is the point of light, it is quite clear that the focus of the objective defines the position of the light.

If, then, the condenser be 3 in. focus and the objective 12 in. (or such as would require the conjugate B at 12 inches), then the point of light must be at 4 in. from the lens, as shown in fig. 6, but if an objective of 6 in. focus be applied the light must be moved back to 6 in., as shown in fig 5.

* I am not unmindful of the magnificent work done by Dr. Henry Draper with his reflecting telescope.

Now the law that "diverging light varies in intensity inversely as the square of the distance," shows clearly that by moving the light back from 4 in. to 6 in. we have lost about one-half of it, and demonstrates the fact that whatever be the focus of a condenser best suited to a long-focus objective, it cannot possibly be near so good—as a light collector—as a shorter focus condenser would be when shorter focus objectives are employed.

There is a limit to the shortness of focus for a lantern condenser on account of the heat given off by the incandescent lime, and when this limit has been reached for use with a short-focus objective, the condenser must inevitably break if an objective of longer focus be employed.

Double Condensers.

Single lenses, such as are shown for simplicity in explanation at figs. 1 and 4, are never used as lantern condensers, for two good reasons, firstly, they would be too thick to stand the heat given off with the light; and, secondly, they suffer from a defect known as spherical aberration, of which we shall have something to say presently.

A biconvex lens of 3 in focus and 4½ in. diameter would be about 2 in. thick, and would not stand the heat for many minutes.

Now, let us see what two lenses will do.

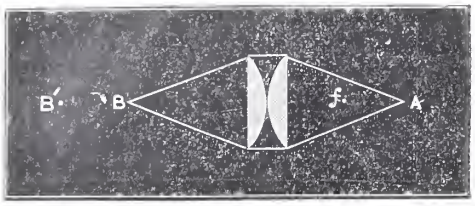


Fig. 7.

In fig. 7 we have two plano-convex lenses, under similar conditions as explained in reference to fig. 3; divergent light from a point A immerges practically parallel, and parallel light falling upon the second lens is conveyed to B; here we have very nearly the same conditions as at fig. 5; but these two lenses, which are each 6 in. focus, are only half the thickness, consequently they are less liable to fracture by heat. If we place the point of light near to *f*, the rays immerging would diverge (see fig. 4), and these diverging rays, falling upon the second lens, would converge to the conjugate B¹; but these lenses, being of equal diameters, the second lens would not take up all the diverging rays from the first lens, the marginal rays would be thrown into the mount, and therefore lost, as shown in fig. 8.

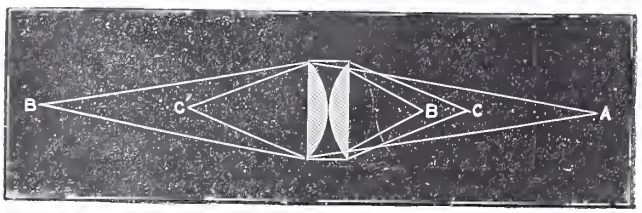


Fig. 8.

Where for a pair of 6in. focus plano-convex lenses, A B¹ represents the conjugates of the second lens at 12in. each; C C¹ the conjugates of the pair of lenses, viz., 6in. on each side; B B¹ the 12in. and 4in. conjugates of the pair of lenses, and demonstrates the fact that of a 4in. diameter front lens only 3⅓in. of its diameter is utilised when the 12in. objective is employed.

Triple Condensers.

If we introduce a third lens, which should be of long foci and consequently very thin, we should be able to get the light within the

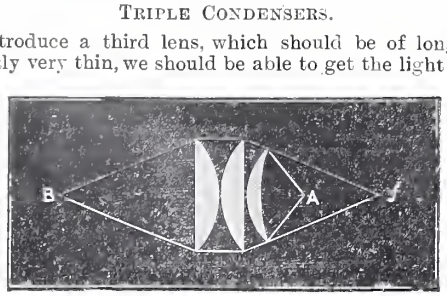


Fig. 9.

distance of say 2in.; this would diverge the rays, and the middle lens would receive the diverging rays and pass them on practically parallel to the last lens, which would converge to the conjugate B¹, as shown at fig. 9.

The advantage then is that we get a thin lens of suitable focus and diameter close up to the light, and with such a combination as shown at fig. 9 light may be collected and utilised up to an angle of 90 deg. to 95 deg., which is not possible with any single or double condenser.

Spherical Aberration.

Very early in this communication it was said that rays converged *approximately* to one point; for, as a matter of fact, no single lens having spherical surfaces has the power to converge rays *absolutely* to one point, so that it is not possible by any single lens to obtain an exact focus.

Sir John Herschel has shown that the spherical aberration may be reduced to one-fourth of that of a single lens in its very best form, by means of two plano-convex lenses having their convex surfaces towards each other, and their radii as 1 to 2·3.

But it was Dollond who, over one hundred years ago, first laid down the principal that spherical aberration of single lenses is proportional to the cube of half the angle of the transmitted rays. But, says Dollond, "if two glasses be so proportioned and situated that the refraction be equally divided, then they will each produce a refraction equal to half the required angle, and therefore the refraction being in proportion to the cube of half the angle taken twice, will be but a fourth part of that which is in the proportion to the cube of the whole angle, because the cube of one is but the eighth part of the cube of two, and so the aberration where the two glasses are rightly proportioned is but the fourth of what must inevitably be when the whole is performed by only one lens."

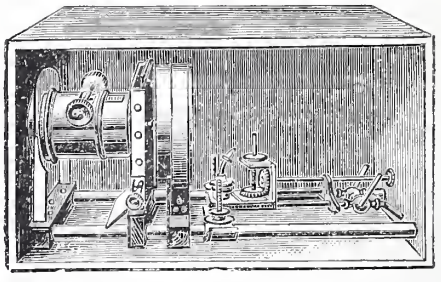
Now, by the same reasoning, where the refraction is divided between three lenses, the aberration will be found to be but a ninth of what would be produced by a single lens, because three times the cube of one is but one-ninth of the cube of three.

To those who have followed what has now been said, the advantages of a triple condenser for lantern purposes must be manifest.

(To be continued.)

MATTHEWS'S NEW PORTABLE OPTICAL LANTERN.

Holmes and Watson, of Danbury Street, Islington, have placed this instrument on the market, and it possesses some distinctly novel features of construction. In general appearance it is totally different to ordinary lanterns, as shown in the diagram. Telescopic brass tubes carry blocks, which carry the objective, the condenser, and the jet. The front is of brass, and very rigid, as it should be to carry the objective. The metal body of the lantern is merely slipped on and buckled to the top of the block carrying the condenser, and the position of the objective, condenser, and light is at once adjusted by sliding the tubes in and out. The carrier stage is of quite new design, and is provided with a rising platform, so that various size slides may be used at one uniform level, without



the loose slips which are always falling out or getting lost. The slide is slipped into the top of the carrier in the usual way, and then by turning the milled head at the side the wire supports just seen in the diagram are brought forward, and the slide slips out on to the platform, so that we have no hesitation in saying that slides may be shown quicker by this method than any other, and only one person is required.

The jet is specially designed for this lantern and has screw adjustments everywhere, so that the light may be shifted up or down, or from side to side with the greatest ease. The accompanying figure shows the lantern packed away in its box, which only measures 13½ by 6 by 5 in., and the lid of this box forms a stand for the lantern, and forms also a tilting table.

We have given this lantern a thorough trial and can highly recommend it for portability, efficiency, and ease of movements. Prices, complete with 6 in. focus objective and blow-through jet, £6 6s.; with mixed jet, 9 in. extra large diameter objective and meniscus condenser, £9 9s.

The Month.

The Continuating Action of Light.

E. Guillaume states from experiments that the action set up by light on gelatino-bromide plates continues, and that he has found that half of a plate which had been exposed and kept thirty hours gave a more harmonious result than the half developed immediately after exposure, in fact that the fact of keeping all exposed plates thirty hours gives a more fully exposed negative than when developed immediately after exposure. When an exposed plate was divided into three, four, or six pieces, and these developed at intervals of three, six, and fifteen days, the only difference to be noted was between that portion immediately developed and that which had been kept thirty hours, those parts which had been kept longer showed no difference in results to the parts kept thirty hours. Guillaume states as conclusions from his experiments that a gelatino-bromide plate when exposed undergoes three stages of unequal duration; these are, the first and shortest, the period during which it suffers the continuating action of light; the second period, during which it preserves in a stationary condition, without improvement or depreciation, the impression received at the moment of exposure, plus that of the first stage; and finally the third stage, when depreciation of the image sets in. —*L'Amateur Photographe.* [Guillaume's subsequent statements prove that he is by no means conversant with what has already been recorded on the duration of the second stage, as will be seen when this subject is treated of in our translation of Eder's "Handbook," and if, as he says, he proposes to institute experiments as its duration, we may fairly prophesy that they will then be valueless, in consequence of the advances which will have been made.—Editor.]

Toning Collodion, Salted, and Albumen Prints with Platinum.

Quednau states that the blue-lilac-tinted collodion papers are alone suitable for these baths. Vigorous over-printing is necessary, as the prints lose considerably. For separate toning and fixing, the ordinary chloroplatinite and nitric acid bath is suggested, and fixing in 1·5 hypo. For plain paper the following complex bath is suggested:—

Distilled water	2,000 parts.
Sodium hyposulphite	500 „
Ammonium sulphocyanide	55 „
Lead acetate	20 „
Alum	15 „
Citric acid	15 „
Lead nitrate	20 „
Sol. potassium chloroplatinite, 1 per cent. ...	75 „

Photo. Mitth., Sept. 11th, p. 171.—[Mercier, in his estimable little work, "Virages et Fixages," vol. ii., p. 18, points out that chloroplatinite forms a compound with hypo, which is not stable in light, and which gives yellow whites, and it is very questionable whether all the toning action in above bath is not due to the nascent sulphur set free by the decomposition of the hypo by the alum and acid.—Editor.]

Improvement in Half-tone Blocks.

Dr. E. Albert has patented a new method of preparing half-tone blocks, which is stated to be a great improvement. The number of lines on a grain screen varies from 5 to 8 per mm.: more than 8 gives blocks difficult to print, less than 5 gives flat results. The proportion of the intervals between the lines to the breadth of the black lines is 1·1, and this is not the best for the high lights, and for the shadows 3·1 is better. Albert has arranged a micrometer screw on the objective, which is sensitive to 1-30th mm. The action of this is to broaden or narrow the lines, and thus gain the effect required.—*Talbot's Neuheit*, Sept., p. 570.

Combined Toning and Fixing Bath.

Gaedicke states that a carefully-washed collodio-chloride print was dusted in one place with pure silver sulphide and in another place with precipitated sulphur, and the whole exposed to the action of air and light. The silver sulphide had no action on the image, whilst the sulphur eat the image right away. The two ingredients of the combined bath which are hurtful are citric acid and alum; sulphocyanides are not so easily decomposed as hypo, and as they form permanent gold salts they may be used. Lead in a combined bath has merely a physical and not a chemical action; causing rapid precipitation of the chloride of silver, they improve the tones without entering into the image. Gaedicke strongly recommends boric acid and the following particular formulæ:—

Distilled water	1,000 parts.
Sodium hyposulphite	200 „
Boric acid	30 „
Lead nitrate (dissolved in water)	15 „
Ammonium sulphocyanide	20 „
Sol. chloride of gold (1 per cent.)	60 „

Black sulphide of lead is precipitated in twenty-four hours, and the bath is then ready for use. The clear solution is absolutely without smell, and by continued use only innocuous silver sulphide is deposited. When fresh it tones very quickly, and it is advisable to use some of the bath up and add fresh and fresh to it. It is important that the paper, which is always acid, should be well washed and neutralised; the prints should be freed from soluble silver salts, then placed in 1 per cent. solution of ammonia. Care must be taken in washing several prints that the whole of the ammonia is not neutralised; there should always be a faint smell. Sodium carbonate may be used in moderation for the same purpose; the prints can then be washed twice in water and then toned. The prints should be taken out of the bath whilst still rather redder than desirable because they turn colour in drying.—*Photo-Wochenbl.*, Sept. 19th, p. 321.

Notes on Matt Varnish.

Lainer explains the formation of matt varnish films as analogous to the separation of a salt from its solution in water by the addition of some liquid in which the salt is insoluble For some purposes Lainer states the following matt varnish is particularly suitable; it is not quite so opaque as the sandarac and toluol varnish which he has previously described, but it gives a fine grain and takes the retouching pencil well—

Gum dammar, powdered	1 part
Ether	20 parts
Absolute alcohol	1 part

This should be allowed to stand for some days and the upper part poured off the sediment. He also suggests the following as a good formula—

Ether	100 parts
Sandarac in powder	10 „
Dammar	3 „

When dissolved, add—

Benzol	50 to 60 parts

Also he suggests that 5 parts of asphalt dissolved in 100 parts of toluol and filtered gives a dark-brown liquid, which when poured on a negative dries transparent, but takes retouching well, and is useful for thin negatives.—*Photo. Corresp.*, Sept., p. 425.

North Middlesex.—Ordinary meeting, 25th ult., Mr. W. B. Goodwin, A.R.I.B.A., in the chair. Mr. Thomas Bedding lectured on "Stereoscopic Photography." The full text of this paper will appear in our columns. Mr. Traill Taylor, who accompanied Mr. Bedding, produced several stereoscopes and some hundreds of slides, and kept the members interested and amused for some time by the wise and witty remarks and comments he passed upon them. Mr. H. Smith took first place for pictures taken at West Drayton. Next meeting, 9th October, "Wet Collodion," by Mr. W. E. Debenham. Visitors welcome.

Trade Notes.

J. BARNARD AND SON, of 19, Berners Street, London, W., have for years made a speciality of preparing colours for painting slides, and they now prepare three boxes with special varnish colours, which, from specimens we have seen, leave nothing to be desired as regards brilliancy and transparency. The colours are put up in collapsible tubes, and ten in a japanned tin box, with varnish and brushes, for 5s., ought to be cheap enough to satisfy the most exacting. More expensive sets in mahogany boxes are to be had at 15s. and 30s. each. Messrs. Barnard also publish a very complete little work by Garnier, entitled, "Painting on Glass for the Magic Lantern, and the Lantern, and How to Use It."

MR. GRAYSTONE BIRD, of 38, Milsom Street, Bath, send us a special slide which is one of a series on childlife, which is exceptionally happy. Three chubby little mites are artistically posed in their shifts, and the technique and lighting are everything that can be desired. We should like some of our competitors to see this slide, and we recommend them to buy it, as it will afford them a capital standard to work up to. It is exquisitely soft, full of detail in the high lights, and without black shadows. Mr. Bird issues a special list of new slides for this season, which includes lifeboat, bathers, winter and snow, theatrical scenes, sea studies, Brighton studies, and the special series of children.

MR. ALFRED UNDERHILL, of 32, Clarendon Road, West Croydon, sends us also a list of this season's slides, which include "A Visit to the Chicago Exhibition," which should be very popular just now, and also scenes from Lord Tennyson's "Becket," as acted at the Lyceum. Numerous other desirable sets are also offered. Mr. Underhill has long been known as a successful slide maker, and he is no less happy in his painting of slides.

MR. WM TYLAR has been obliged, in consequence of pressure and increase of business, to remove into more roomy premises at 41, High Street, Aston, Birmingham, where he has a commodious showroom. He sends us some slide masks with new-shaped openings, which offer considerable choice to lantern workers.

SHARP AND HITCHMOUGH, of 101, Dale Street, Liverpool, send us samples of their opaque and opaque washable lantern screens. Nothing adds so much to the success of a lantern lecture as a good screen which is opaque, is not dirty, and which shows the picture up well. Here our readers may have their choice, and from practical experience we can speak well of these.

Apparatus.

THE PAGET PRIZE PLATE COMPANY'S PRINTING-OUT PAPER.

THIS paper is now placed on the market for printing-out in the ordinary manner, and from our own trials and specimens we have seen it is well deserving of notice. The particular directions issued are as follows :—

Printing should be somewhat darker than the finished print is required. It should be borne in mind, when toning, that the finished image will be bluer and slightly stronger when dry than in the wet state. Toning.—Either of the following well-known baths answers admirably.

COMBINED TONING AND FIXING BATH.

No. 1 Stock.

Hyposulphite of soda	20 oz.
Alum (potash alum only)	5 „
Sodium sulphate (not sulphite)	14 „
Water to	1 gallon.

Dissolve the hypo. and alum each in about one quart of hot water, mix, and then add sodium sulphate already dissolved, making up to one gallon with remainder of water. This mixture should then be left for some hours for the precipitate to settle, when the clear solution may be poured off or filtered and is then ready for use. It will keep indefinitely.

No. 2 Stock.

Gold	15 gr.
Acetate of lead	64 „
Water (distilled)	8 oz.

Dissolve the acetate of lead in the water and add the gold. A heavy precipitate forms in this solution, which should be shaken up when any is to be poured out; it redissolves when added to No 1 stock solution. For use: Mix 8 oz. of No. 1 with 1 oz. of No. 2. When this bath is used the paper should *not* be washed *before* toning.

SEPARATE TONING BATH.

Sulphocyanide of ammonium...	30 gr.
Gold chloride	2½ „
Water	16 oz.

Before immersion in the toning bath, the paper should be *very thoroughly washed* for at least fifteen minutes in running water. This is necessary to insure even toning. In hot weather, if necessary, the print may be soaked in alum (alum 4 oz., water 20 oz.) for five minutes before toning in this bath. Another thorough washing is necessary between the alum and toning bath.

FIXING BATH.

Hyposulphite of soda	3 oz.
Water	1 pint.

After fixing, wash well.

A highly-glazed surface can be obtained by squeegeeing the print when wet on to a sheet of clean glass, previously rubbed over with French chalk, a matt surface by squeegeeing it on to a finely-ground glass; but in both cases care must be taken that the French chalk is well rubbed off. Burnishing may be done in the same manner as with albumen prints.

The paper is packed in 1s. packets containing 36 quarter-plate, 16 half-plate, and 9 whole-plate pieces.

But the particular process which the manufacturers will shortly place on the market in full details is as follows. The paper may be exposed to light for about one-tenth of the normal time required for obtaining a fully printed-out image and then developed and toned to full vigour. The actual time of exposure to light is not a matter of very great moment provided that all the principal details but not the details of the high lights are visible. As an example, we may say that at the demonstration kindly given us by Mr. Wilson, of the above company, a sheet of paper was exposed under a negative for fifteen seconds to diffused light, and the paper was then laid in a five per cent. solution of potassium bromide for about four minutes; in this bath the faint image became fainter still and much yellower in colour. The paper was then thoroughly washed and treated with a strongly restrained hydroquinone developer till of a somewhat weak orange colour, again thoroughly washed and toned in a simple sulphocyanide bath. In this the print rapidly gained in intensity and vigour, until on looking through the print all yellowness had disappeared; then it was washed and fixed, and the result was a chloride print equal in every respect to one fully printed out and toned and fixed in the usual way. This process is also applicable to the printing-out opals and lantern slides of this firm. The whole of these operations are carried out in yellow daylight such as obtained by a yellow blind, and the only point which requires extra care is to learn the exact stage at which to stop development.

The value of this process is certainly very great, as the amateur who is engaged in business all day may expose at least a dozen prints before setting out in the morning, and then put them on one side to finish at night. Ladies are proverbially bad printers, but now we shall be in the position of being able to tell our wives, sisters, and cousins to merely put the frames out for about five minutes in the middle of the day, and then find on coming home at night plenty of work ready for us. With an ordinary negative sufficient exposure can be given to the lantern plates by burning about 24 in. of magnesium ribbon, so that we can place half-a-dozen or more lantern slides in frames in a circle and expose all at once. As soon as the complete instructions are ready we shall print them in detail.

EMERY'S DRY PLATE VARNISH.

Wilfred Emery, of 24, South Street, Baker Street, W., has sent us a sample of his new negative varnish, which gives a very hard protective film if flowed over the negative while warm. It flows readily, and has no tendency to form ridges and waves of unequal thickness.

East London.—General meeting, 26th ult. Mr. Wilkinson occupied the chair. Mr. S. Herbert Fry gave a lecture upon the Sandell plates, which proved to be very interesting. Mr. Pasco passed around two whole-plate negatives for inspection.

Leigh.—The general meeting was held on 28th ult. Mr. T. Peters presided. The report was passed with a good balance in hand. The election of officers for season 1893-4—President, James Ward, B.A.; Past-President, J. H. Stephen; Vice-Presidents, M. F. Burrows, R. B. Mawson, T. L. Syms, T. Peters; Committee, J. Berry, W. Hampson, N. Crouchley, R. Leigh, T. G. Hirst, J. Battersby, and P. Seddon. Moses and Edgar Prestwich, Atherton, were elected members.

Exhibitions

Society.	Entries close.	Opens.	Closes.	Address of Secretary.
P. S. G. B.	Sept. 13	Sept. 25	Nov. 15	R. Child-Bayley, 50, Gt. Russell St., W.C.
Hamburg	—	Oct. 1	Oct. 31	Das Ausstellungs Committe, 33, Schwanenwik, Hamburg.
Photographic Salon	Sept. 27	Oct. 9	Nov. 11	Sec., 215, Shaftesbury Avenue, W.C.
East London	Oct. 10	--	—	W. R. Gould, 61, Gibraltar Walk, E.
Hackney	Sept. 30	Oct. 17	Oct. 19	W. Fenton Jones, 12, King Edward Road, N.E.
South London...	—	Nov. 7	Nov. 11	C. H. Oakden, 53, Melbourne Grove, Dulwich, S.E.
Leytonstone Camera Club ..	—	Nov. 20	Nov. 25	A.E. Pailey, Rose Bank, South-west Road, Leytonstone.
Stanley Club	Oct. 31	Nov. 17	Nov. 25	W. D. Welford, 57 Chancery Lane, E.C.
Madras	—	Dec.	—	Hon. Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28, 1894	113, West 38th Street, New York.
Midland Camera Club ...	Sept. 20	Oct. 2	Oct. 14	C. Jevons Fowler, 4, Woodstock Rd., Moseley, Birmingham.

PINHOLES: THEIR PRINCIPAL CAUSE AND CERTAIN CURE.

By A. A. Pearson.

Most photographic dealers can testify to the innumerable complaints about pinholes, and, notwithstanding the explanations published from time to time by the photographic press, the blame is invariably laid on the plate makers, especially if the inevitable but treacherous camel's-hair brush has failed to remove them. Films come in for a bigger share of vituperation than plates, probably because, owing to the electrical nature of the celluloid and the method of packing in contact, dust more easily accumulates on the back and gets transferred to the face of the next one, and is either removed very imperfectly or more probably left on. Dust is defined as matter out of place, and for that reason is to be found everywhere where it is not wanted, having a special liking for inside dark slides, the face side of plates, and both sides of films. Those who recognise this fact bring the camel's hair mop into action, which shovels a load off and disperses two loads on. In the interval of picking another slide up, the brush is dropped or laid on the dark-room shelf or table, which, of course, is religiously dusted every day (mine is not). Many people hold the plate up to the mouth and blow a blast of moist air across; sometimes the dust particles get cemented on a bit tighter, but they never trouble to walk off. Rarely are the slides seen to, though they might with advantage be inverted and mopped out. The camera is then taken for a ride in a train, and the vibration gently dredges the dust off the slide on to the plates. Last of all, the developer seals it on permanently. A good substitute for a brush was recently recommended in *Scraps*, viz., a straight piece of wood with velvet glued over the edge. If the velvet be silk and not cotton it will answer the purpose well, but many people stick at the trouble of making it, and some who have not stuck have managed to ooze the glue through the velvet and convert it into a sharp scraper. Therefore I humbly submit a substitute, which I have used for four years and never found to fail—viz, an old clean silk tie or scarf, which has given up being respectable enough to wear. I roll the tie into a flat pad and *wipe* the plate or film with it; every little bit of dust gets dragged off, and to keep it clean I fold it inside out and slip it into one of Edwards' film envelopes. Along with it is a clean camel's-hair brush to dust the slide with only. The plate is again wiped with one stroke before developing and brushed under the solution with a brush kept for the purpose, to remove any minute air-bells, the brush being dropped into a measure of water to keep it clean and prevent the hairs rotting, after which it may be washed under the tap and squeezed out for next time.

This routine once adopted is very simple, and will save an infinity of after labour, spotting brushes, Gihon's opaque, etc., to say nothing of the plate maker's reputation. A muddy developer will often, if not kept in movement, cause black spots, which are worse than pinholes; the remedy is obvious.

Harringay.—On 28th ult. Mr. C. Townley presided over a well-attended meeting. A lively discussion took place on dry plates, papers, etc.

Splashes of Ink.

By Penfeather.

In 1889 there were eighty-four photographic societies in Great Britain and Ireland. Of these, twenty-four, or two-sevenths of the number, included in their title the word "amateur." In a list compiled at the beginning of the present year no less than 244 societies appear and of these, thirty-five, or one-seventh, style themselves amateur societies, so that in five years the number of societies has increased by 160, while the number of amateur societies has only increased by eleven. This computation can, however, only be taken as approximately correct, since many societies may be strictly "amateur"—school and college societies, for instance—which in the classification adopted have not been counted as such. It is evident that the tendency is towards abolishing a distinction which serves no useful purpose at the present day, and which is calculated to perpetuate the feeling of resentment which undoubtedly exists towards amateurs as a body on the part of some professionals. Nothing is so conducive to good feeling and mutual respect between the two classes as the periodical opportunities of exchanging opinions and experiences afforded by Society meetings. The expression "exchanging experiences" is peculiarly appropriate in this connection, since amateurs and professionals must necessarily carry on their work on widely different lines, and it is a fact that some of the operations which are carried out in every-day practice in the studio, and which are the most perfectly systematised, are just those in which the amateur is found to perform but clumsily, while the results of experiments which the amateur undertakes *con amore* must be of assistance to the professional in enabling him to keep abreast of the times in matters which might otherwise escape his notice.

As to picture-making, studio portraiture being excepted, the advantages possessed by each side are fairly counterbalanced. The face of nature is equally open to all, and the prize is to him who can best interpret it. In the pursuits of literature and painting we do not find the senseless antagonism which has been alluded to in existence, and there is no reason why it should continue to exist among photographers.

The Photographic Society of Great Britain has acted wisely in arranging the exhibition gallery so that room is available for seats during the lantern shows. Half-an-hour's standing will tire even the strong, while to the weak and infirm it is positive torture. Under such a trial of physical endurance even the most perfect and beautiful slides may well fail to arouse enthusiasm. The gallery gains in appearance, too, by the removal of the ponderous structure which has hitherto served as the lantern rostrum. Whatever opinions may be formed about the exhibition as compared with those of former years there can be but one as to the aspect of the exhibition room as now arranged, and that is that a decided improvement has been made.

Albumenised paper has long been threatened with supercession but has managed to survive. Carbon printing, perhaps, has been its most dangerous rival, and at one time there was a considerable number of studios in the country which turned out carbon prints exclusively, and of a quality equal if not superior to the best that could be produced on albumen. The difficulties of the process, however, owing to the extremely variable nature of our climate, were found too great in practice, and at the present time there are probably not more than half a dozen studios in which the every-day work is printed in carbon. A real Richmond has now come into the field in the shape of gelatino chloride. Its advantages in many respects are so great that it is not surprising that it is becoming widely adopted for professional work. The results obtained, however, cannot be regarded as altogether satisfactory, and in many instances there is a distinct deterioration in the work, as compared with that formerly produced on albumenised paper. Many of the published cabinet portraits of celebrities are now printed in gelatino-chloride, and the study of a row of these in a shop window will be well repaid in the lesson to be learnt from their shortcomings. It will be found that while no single print is better than could be produced on albumen from the same negative, there will be apparent a want of harmony in the tones when several are shown side by side. The process is yet in its infancy, and it would be obviously unfair to condemn it, though it is not unfair to criticise it, on the evidence now before us. Its imperfections are in a sense an advantage, since an opportunity is afforded of experimenting with a view to overcoming them, with fame, at least, in prospect to him who succeeds. In this we have undoubtedly a process by which prints may be made to satisfy the most determined advocate of simplicity, while those whose tastes lie in that direction may successfully rival the meretricious prettiness of the plum box.

Lantern-Slide Making.

By R. CHILD BAYLEY.

III.

(*Continued from page* 192.)

LANTERN-SLIDES WITH GELATINO-BROMIDE PLATES.

THE manipulations in the case of gelatino-bromide emulsion for transparencies are the same as those just described for gelatino-chloride, should a similar or but slightly increased speed be required. But if this be the case, there is very little, if any, advantage in employing the bromide salt of silver rather than the chloride; in fact, the advantage lies with the chloride when even a moderate degree of rapidity is not required. This is not always the case, however, and when resort has to be made to reduction in the camera, a plate that possesses at least something like the sensitiveness of the wet plate, as generally understood, becomes a necessity, and bromide is then useful. There is, as far as transparency work is concerned, no great advantage in employing a mixture of silver bromide and iodide in place of pure bromide, and on the other hand bromide by itself is without special suitability. The formulæ which are or were given so plentifully in the text books for the manufacture of an emulsion suitable for ordinary landscape work are generally suitable for the production of lantern plates if certain precautions are observed.

Heinrich's or Coignet's gelatine should be used, and it is a good plan to swell about half as much again as is required for use in water. When swollen apply a very gentle heat, not above 100 deg. Fahr., until dissolved; stir it well up and set in a beaker or some other vessel of suitable shape. When fairly firm it should be turned out in a block, and about one-sixth of its total height cut off with a clean, sharp knife from both top and bottom; in this way a few impurities will probably be got rid of. The gelatine employed in the previously described process for gelatino-chloride plates can be treated in this manner with equal advantage.

A bromo-iodide film which has yielded very suitable plates for lantern-slides, can be made as follows:—40 gr. of Coignet's gelatine are allowed to swell in 2 oz. of water, in which has previously been dissolved 160 gr. of potassium-bromide. Two drops of hydrochloric acid should be added, and then, when the gelatine has absorbed the greater part of the water, the vessel in which the mixture is contained may be placed in a saucepan of water at a temperature of 120 deg. Fahr. In the same saucepan a couple of test-tubes may be immersed, one containing 200 gr. of silver nitrate, dissolved in 3 oz. of water, the other 12 gr. of potassium iodide in ½ oz. of water. After about a quarter of an hour's immersion, or when the gelatine is seen to be completely dissolved, it should be transferred to a bottle, provided with a good cork (the thinner the glass of which the bottle is made the better), and the silver nitrate solution added a little at a time, corking the bottle and well shaking it between each addition. When all the silver is added the iodide can be added in the same way, too much shaking cannot be given to the emulsion at this stage. Of course, all operations during and subsequent to the addition of the silver nitrate to the gelatine and bromide must be conducted in the dark-room. The bottle and its contents must then be raised to boiling point; to do this it may be placed in the saucepan, which has been half filled with water, the cover put on, and the whole arrangement placed on a gas or other stove. It should be allowed to boil vigorously for one minute, and can then be taken out, well shaken, and allowed to cool. 200 gr. of Heinrich's gelatine are allowed to soak in water for half an hour, or are treated as prescribed above, to remove impurities, and the jelly so obtained is melted at a temperature of 120 deg. Fahr. and added to the emulsion, which should by that time have cooled down to that temperature itself. This additional gelatine must be well mixed with the emulsion by shaking or stirring, after which the whole may be allowed to set, washed, filtered, and coated as already described. The resulting plates, if the manipulations have been carried out with care, will yield clean, bright transparencies with either pyro or ferrous oxalate.

The development of slides on gelatino bromide plates is, when ferrous oxalate is employed, a very simple and easy process, the only drawback it possesses being the cold black tone of the resulting slide. This developer is best kept in the form of saturated solutions of ferrous sulphate and potassium oxalate. A drop of sulphuric acid should be added to each ounce of the water employed to dissolve the ferrous sulphate. To develop, one part of ferrous sulphate solution is poured into six to eight parts of the oxalate and half a grain of bromide per ounce of developer added. Too much bromide should not be added, nor should the developer be diluted with water. When development and fixing are accomplished and the plate has been well washed it must be treated as described above (see *chloride plates*) to remove the opalescence due to the oxalate of lime.

For the development of home-made bromide plates for lantern slides when warm tones are desired, pyro and ammonia affords every facility with the exception of immunity from staining or from the chance of doing so, against which precautions have to be taken. The stock ten per cent. solution of pyrogallol may be made up as follows:—

Pyrogallol	1 oz.
Sodium sulphite	3 „
Citric acid	2 dr.
Water to	10 oz.

Ten per cent. solutions of liquor ammonia and of ammonium bromide should also be employed, together with a saturated solution of sodium sulphite. Then for each ounce of developer the following must be taken:—

Pyro solution	15 minims.
Bromide solution...	30 „
Ammonia solution	15 „
Sulphite solution to make	1 oz.

I have also developed very clear transparencies by means of the following formula in which potassium metabisulphite is used in the place of sodium sulphite. It was first recommended, I believe, by Messrs. Mawson and Swan, for their lantern plates, and involves the employment of two solutions composed as follows:—

Pyrogallol	40 gr.
Potassium metabisulphite	120 „
Water to	20 oz.
Liquor ammonia	160 minims.
Ammonium bromide	40 gr.
Water to	20 oz.

Equal parts of both solutions are mixed to form the developer.

For the lantern plates which are in the market, a developer is frequently recommended in which ammonium carbonate is the form in which the alkali is employed. While I have found this give very warm pleasant tones on commercial plates, it has not answered in my hands for home-made lantern plates, better results on which can be obtained by the use of the two above-mentioned developers.

When the slide has been fixed and washed, it can be cleared by the application of the usual acid alum solution, or if the tone is not exactly what is required, it can be improved, or at any rate altered, by being immersed in a mixture of equal parts of the acid alum solution and a saturated solution of ferrous sulphate.

Of the methods of slide making I have now described, all are dependent upon the haloid salts of silver for their sensitiveness, and all bear a strong resemblance to each other. Moreover, it would be extremely hard to decide which for general purposes was the best. Collodion is preferred by professional slide makers; it undoubtedly is the easiest to manipulate when we except its liability to scratches. Gelatino-chloride is in point of clearness of the lights and warmth of tone but a very little way behind collodio-bromide for general convenience; and since the previous article upon this subject was written, in which fear was expressed that it was inclined to drop out of notice, I have heard from a manufacturer of chloride plates that the demand for them is greater now than it ever was. Gelatino-bromide possesses one desirable quality which the others do not, and to this must be attributed its great popularity; I allude, of course, to its speed. For copying in the camera the long exposure the former methods require, gives to it the superiority of which otherwise its liability to stain, and the difficulty of obtaining with it satisfactory warm tones would deprive it.

(*To be concluded.*)

Societies' Notes.

THE Glasgow High School Photographic Society is now defunct. There is not sufficient interest in the school this year to sustain it.

AT a meeting held at Great Yarmouth on 26th ult., it was proposed and seconded that a club be formed for the study of photography, which was carried unanimously. It was further resolved that the club be called the Great Yarmouth Amateur Photographic Association, and that only those who practise photography be eligible for membership. Subscription, 5s. per annum, payable on election. The first meeting of the association will be held on Tuesday, October 10th, at 8 p.m. sharp, at the "Two Bears Hotel," when the subject of "Negative Making" will be fully discussed, and applications for membership considered.

MESSRS. GALE AND CEMBRANO will not judge the lantern slides at the Hackney Exhibition, the Committee having unwittingly infringed some of the recommendations of the conference of judges.

Captain Abney will present the prizes, and Sir Charles Russell, M.P., will open the exhibition. Amongst the exhibitors are Messrs. Elliott, Thos. Fall, Gottlieb, Dresser, Mrs. Barnes-Ward, Messrs. Wray, Powell, Platt and Witte, Fuerst, Hannam, etc.

THE Central Photographic Club will hold their first weekly meeting on Friday, October 6th, when the AMATEUR PHOTOGRAPHER Prize Slides will be shown. On the 13th a smoking concert will be held, Mr. J. Traill Taylor in the chair.

THE North Surrey Photographic Society have started with a new lease of life at the Institute, Knight's Road, Norwood, and inaugurate the winter session by showing the AMATEUR PHOTOGRAPHER Prize Slides on Tuesday, October 10th. Mr. R. W. Wilson, of 42, Norwood Road, S.E., the Hon. Sec., will be pleased to welcome the names of any new members. This society is particularly favoured, as Colonel Gale, Mr. T. Bright, and others of our leading workers are active members.

Societies' Meetings.

Bath.—The last summer outing took place on 27th ult. to Claverton. Rain fell heavily during the day; the further progress through Warleigh had to be abandoned. At the first indoor meeting of the winter session, October 25th, a discussion will take place on the most suitable method of mounting and framing photographs.

Hackney.—Ordinary meeting on 26th ult., Mr. Puttock presiding. Members' work was shown by Mr. Bently, and members' opinions asked as regards exposures. These seemed fairly correct, but pictures could be greatly improved by better lighting and a little fuller development. Question was asked whether any member had had any experience with toning Nikko paper with hypo and alum. Mr. Smith said he had used the bath and found it much easier to work after a few prints had been toned. Mr. Roberts had used it for an hour and a half and found no difference in tone. Mr. Magnus showed a print with a red stain and asked for a reason. Mr. Beckett, jun., said that its appearance seemed to be due to contamination with other chemicals. Mr. Beckett then gave a paper upon bromide enlargement by artificial light, which was appreciated very much by the members. He dealt with the various lenses, lights, etc., which might be used in the process, and described the whole procedure in a very lucid manner. With regards to negatives which were a very important thing to bring about good results, he advocated a negative of medium density with a slightly yellow stain as producing good results, thin negatives gave fair results, whilst ghosts were useless. A demonstration was given by Mr. Beckett, jun., in which Amidol was used as a developer and some splendid results were obtained. There were numerous advantages given in favour of enlargements, amongst them being alteration of character of prints, which was sometimes needed, and larger pictures showing to more advantage than small prints.

Northern Photographic Assoc.—The President (Mr. Robins) in the chair. The chairman announced that Mr. Coghill had resigned his office as Vice-President, Mr. Murrow had resigned his office of Secretary, and Mr. Beagley had resigned his office as Treasurer. He (the Chairman) asked the meeting to elect Mr. Beagley Vice-President, Mr. Coghill Secretary, and Mr. Murrow Treasurer. The Chairman's recommendation was approved unanimously. Mr. Coghill then explained the making of lantern slides by the wet collodion process, and was assisted in the practical part of the work by Mr. Simmons. The Chairman, after thanking these gentlemen on behalf of the meeting for their services, said he was authorised to state that those members who wished to co-operate for the purpose of obtaining chemicals, etc., at a low rate and of uniform quality, could give their names in at once. He also referred to the beginners' class, and requested those who wished to join it to send in their names as soon as possible. The address of the new Secretary, Mr. P. D. Coghill, is 252, Wightman Road, Hornsey, N.

Tunbridge Wells.—Bayham Abbey was visited on 30th ult., one of the seats of the Marquis of Camden, who had kindly given permission. The drive of about six miles was most enjoyable, that through the park being noticed for the state of perfection in which it was kept. The mansion, which was built over twenty years ago, is very imposing, overlooking fine woods and pieces of water, which are very picturesque, and cameras were soon brought into use when the party reached the lake, and as they wended their way along the stream continually finding charming bits, in which the sheep grazing assisted in giving life to the composition, till they reached the approach to the ruins, which was over the Murray Bridge with its three arches, through the old ivy-mantled gateway on either side of which are castellated towers, a friendly swan appearing in the nick of time when exposures were made. The ruins date back to the twelfth century, when the Abbey was occupied by a society of white canons, called præmonstratensians, about which time Sir Robert de Turnham granted them all his lands, though the Abbey appears to have been built by Ralph de Dene and his nephew and largely endowed by Ela de Sackville, of Buckhurst, the daughter and co-heir of the said Ralph. A stone, having an inscription near where the high altar stood, states this fact as to its foundation, and it is believed that two members of the Sackville family were buried here. The nave, which was 257 ft. long, 50 ft. high to the plate beams of the roof, and 24 ft. wide, has its once richly-carved pillars, and the north transept and choir its formerly elegant columns and pointed arch. The remains of the chapter-house are three light elegant arches and part of the walls; there is also a portion of the refectory with its offices and the cloisters, also remains of the dormitories with a fractured stair that led to them, the various flat stones in parts of the ruins being thought to be gravestones. Though only a small party went, in consequence of the unsettled weather and a short notice, the kindness of the Marquis was much appreciated, the lovely scenery being the constant theme, as it is some of the finest in the county.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London. E.C.

QUERIES.

6163. **Magic Pictures.**—Could one of your readers inform me whereabouts in London I could obtain the sensitised paper for the magic cigar holders, which produces the negative by smoking on them, or how to prepare them?—G. TAYLOR.

QUERIES UNANSWERED.

Aug. 25.—Nos. 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.
,, 22.—No. 6161.
,, 29.—No. 6162.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

G. MOON asks whether a rising front or swing back is the most effectual in a hand-camera, and whether it is necessary to stop down when using either. We should be inclined to prefer the swing back, and whichever is used the lens must be stopped down more.

RUFUS.—You can hardly say you adhered to our instructions if you omitted the salt and water. We repeat again in detail. Place the prints in a solution of salt 1 oz., carbonate of soda 1 oz., water 20 oz., for ten minutes, wash for five minutes. Use the sulphocyanide bath, which should just be rendered alkaline by adding soda to it; keep the prints constantly on the move in the toning bath. When toned sufficiently, which may be judged by looking through the print, then place in the fixing bath, which should be made 2½ to the pint, with an addition of soda, ½ oz. (1) The water from washing chloride prints must be milky, unless salt or distilled water be used. (2) The unevenness of tone is due to your not washing long enough. (3 and 4) On reckoning up we find the gold bath rather weak; use it in the proportion of 2 gr. gold to 10 oz. of water. (5) Exactly this treatment should answer for P.O.P. (6) As long as you keep your fixing bath alkaline, it may be used for several days, presuming, of course, you don't use it too much; 1 oz. of hypo should fix twelve half-plate prints well and effectually. Try again, and write us.

W. BULLOCK sends a print in to our competition, and informs us he has accidentally spoilt the negative, but has a lantern slide of the negative in its original condition. Then it is very easy to make a fresh negative by contact printing, using a lantern plate; expose fully, and do not try for any hare glass in the negative; keep it rather soft and thin, or else you will lose the detail and effect.

R. E. H.—(1) The mottling in this is due to not rocking whilst developing. The horizon runs up, which is unusual for water; there is an inch too much foreground; the negative was not developed enough, and the print is over-toned. (2) Not sufficiently developed, and print shows a straight line where another one has laid across it. (3) Insufficiently developed; printed in the sun, which is wrong, and too much foreground. (4) Insufficiently developed (5) Ditto, and printed in the sun. (6) Insufficiently developed, under-toned. (7) What did you shoot at, the boy or the church. If the latter, why make it fall down? (8) Under-developed; too much foreground. You need not tell us you are an amateur; may we add, a beginner? You have not yet learnt what your camera will do and won't do; learn this first, and then use it. It is to be assumed that you live in a street; measure the width of this street from your doorway or window; measure the distance to the nearest lamp-posts on both sides. Then set somebody to walk up and down and fire at him; take him opposite, at the first lamp-post, in the middle of the road, etc. With every exposure say that man is so many feet off now, so many less, or so many more. Develop your negatives, remembering the distances, and by careful study of these you will learn more in two days, and with a twenty packet of films than from any amount of our talking to you, and you won't regret the films and time as wasted. All your shots are much too far off. Give up the developer you are using and try Amidol or Metol—do not print in the sun, and write and send us some more work when you have tried our plans. If you can call and see us some day, we will give you five minutes' chat. Yes, the new camera is a great improvement, and equally as well finished. Do you want prints back?

E. W. H. asks whether P.O.P. may be fixed without toning, and whether the colour thus obtained is decent, and is Nikko paper treated like bromide, and is the half-tone similar, and is there as much detail? P.O.P. can be fixed without toning, and the colour obtained is a sort of red-brown, which is as a rule too hot in tone except for the taste of some of the most advanced school. Nikko is treated exactly like bromide, and gives similar or even more half-tone and more detail, the latter really showing more because kept on surface.

A THREE YEARS' READER has a 5 by 4 camera, and two half-plate lenses; he has damaged his 5 by 4 lens, and wants to know what would be the result if he used the half-plate lenses instead. Well, the result would probably, if you are a good worker, be good, if a bad one, bad; otherwise the only difference would be that you would include a rather narrower angle on your plate, that is to say, that objects would be larger from the same standpoint, so that if your 5 by 4 lens be of 5 in. focus, and your half-plates of 8½ in. the images would measure respectively 1 and 1¾; then again, as you are only using the centre of your field, probably you would not have to stop down so much to get equal marginal definition. Use them by all means.

H. E. MANN has been using Welford's bicarbonate toning-bath, given on page 455, last vol.; the bath was mixed in a jug, poured into three bottles, which were covered with brown paper. Used the same day, the bath toned very rapidly and successfully to a black and white, but two days after it seemed to have lost all its power, and took quite five minutes to tone to a pale brown shade. Just so—this is one of the advantages of Welford's bath, that keeping it for a day or two it becomes quite useless, and this is explained by the formation of a stable salt of gold and soda $NaAuO_2$, which is not reducible by silver. The remedy is to add hydrochloric acid till the bath is neutral to test paper, when it will readily tone again.

PUZZLED.—Always number prints, please. (1) Spoilt by printing in the sun, and you should certainly have included the steps, and why does the man on the left look across to nowhere, and the man on the right try and look up the steps behind. The point of interest was the basket surely; the third figure is good, easy, natural, and interested. (2) More sun printing, and those boots! by allowing them to be so much to the fore, you have made them the principal object, and although good old soles they are not worth the position, otherwise the grouping is good. (3) Curious that you should ask us the question when your own data will answer it, with 1 and 2 you used pyro for 3 hydroquinone, and, we may add, did not develop long enough; intensify your negative slightly, or print through green glass in a weak light, and you will get a better result.

RYLSTON, who is only a beginner, asks, (1) can I improve negatives which, though very pretty in themselves, give very black and white prints? they are trees and heavy foliage. Have I over-developed or over-exposed, how can I get the best prints, and what paper and process should I use? Probably the negatives are slightly under-exposed, and a developer too strong in bromide and pyro used, so that the negatives, though pretty, give too much contrast. They may be treated as suggested on p. 157. Rapid bromide paper, exposed rather near the light, would be the paper which would reduce the contrast most. (2) Give the formula for best intensifier. We are afraid our correspondent does not read his "A. P." carefully. We treated fully of intensifiers on p. 93; still, here it is—

Mercuric chloride	10 gr.
Hydrochloric acid	10 drops
Water	1 oz

Soak the negatives in this till bleached, wash well, and then treat with a ferrous oxalate developer. (3) For Ilford ordinary and Paget xxxxx plates do you recommend sulphite of soda to be added to the developer, or do you consider plain pyro, bromide, and ammonia to give better results? In the hands of a beginner, sulphite with potash or soda gives the best results; plain pyro and ammonia is a little more difficult to use and more liable to fog. (4) What is the cause of P.O.P. prints staining yellow when in the toning bath, and never losing the stain, and is the alum bath absolutely necessary for this paper? What toning bath, please? Try washing the prints in carbonate of soda 1:20, washing well, and then toning. Alum is not necessary, and we have worked the paper all the summer without once using alum, and never lost a print. We should say never use alum. (5) Beyond being liable to injury by damp is it injurious to negatives to take many prints from them before varnishing; does the image deteriorate by so doing? No, except for the liability of silver stains through damp there is no other danger. (6) What is the best way of drying P.O.P. prints without squeegeeing on to glass to get them to lie straight? Pin them by the corners to a flat board.

H. D. LINCOLN got into trouble over his toning, and we suggested a certain method of working which he has tried with good results. Now he writes to say that after toning eighteen prints they all turned red; the Ilford bath was used. Probably the gold was exhausted; with addition of another grain of gold and making sure the bath is not acid, all will go right again.

J. J. is lucky; he has had a half-plate camera given him, and hopes to secure some little reminiscences of his fishing excursions when he has mastered exposure, and wants to know whether Watkins' Junior exposure meter would be of any assistance. Most decidedly it would. He also wants a lens which would not necessitate his going so close to the subject as his present one of 8½ in. focus does. Size of image—for this is what is referred to—depends on length of focus, so that with a lens of 17 in. focus objects would be double the size. We should recommend a long-focus landscape lens of 14, 16, or 17 in. focus such as sold by Swift, Taylor Taylor and Hobson, Beck, or Wray.

"J. J." wants to know whether he may send us some prints. Certainly we are always pleased to see any number of prints, only please number them on the back, and if you want them returned enclose a stamped addressed envelope.

ONE IN TROUBLE, who wrote about his creamy oxalate developer, sends us up some oxalate and iron to try. We will do it this week, but have not so far had time. He also encloses a print which, he says, developed up bright, and fixed bright, but which when washed in water turned dark. Our opinion is that the paper has been fogged. We cannot understand how it has happened, we can only suggest he does not see the fog till after fixation. If the print is properly fixed, water can have no fogging action on the print.

ALPHA.—We should say that your fault was not continuing development long enough. Both prints are insufficiently printed and over toned. Try pyro and soda instead of the ammonia, working the same way.

F. J. D.—(1) The only fault with this is the figures, which are out of character. Had you got some small children playing about, it would have been all right. It is slightly over-printed too. (2) In its present condition this print requires at least an inch cut off the foreground, whereas had a boat been sent out so as to break up the expanse of water on right, it would have been 100 per cent. better. Paint over the back of the negative for the trees in the centre. These are printed too deep in order to get out the clouds. (3) Very fair. (4) Too hard, slightly under-exposed, and, therefore, too black and white. (5) Utterly wrong, please. We do not, as a rule, get such white staring water with an overcast sky; and why could you not have raised the camera front so as to have cut at least 1½ in off the foreground and tacked it on to the sky? You know the story of the Irishman who, being 6 ft. high, was put to bed in a 5 ft. 6 in. bed, and because the blankets would not cover his feet and head at the same time, cut a bit off the bottom and tacked it on to the top. You often have to do this in taking views. Perhaps you'll try and remember now to pay a little more attention to your foregrounds and break them up, or, like the Irishman, cut it off and tack it on to the sky. Trim 1½ in. off your foreground in this picture. (6) Here, again, you might have gone just a little bit back and put your camera lower down and included, we think, some big stones in the foreground. (7) Too hard again. (8) Water too white, and surely the picture here was to be found on the right by the bend. (9) Again too hard. You give no information as to development. Are you using hydroquinone? Write and let us know what you are using, and, if you can, send up a negative.

A. J. W. asks—(1) Is it the rule that in taking groups the swing-back of the camera should always be vertical to the ground? He often takes a group and with a whole-plate camera, and generally has to tilt the camera slightly down, but has never been able to find out for certain the exact position of the swing-back. In taking groups and portraits the swing-back may often be used with advantage so as to obtain something on the ground sharp when otherwise much stopping down would have to be resorted to. Practically one may ignore the swing-back in portraiture, using it only to obtain the best effect. (2) Does a plate require less exposure if developed with eikonogen than with pyro and hydroquinone? No, there is no proof that any developer will allow exposure to be shortened. (3) Can you recommend any cheap substitute for a cap in giving time exposures? I find that in taking landscapes I generally want to give the upper part of the picture more exposure than the lower. Evidently this last statement refers to the upside-down picture on the ground-glass. Tylar's window-blind and sky-shade shutter or Place's sky shutter would act well. We have used two of the latter all this summer with excellent results. The only thing to be careful of in ordering these shutters, which are very cheap, is to order at least a size larger than required; for instance, with a 2 in. diameter lens order the one for 3 in. and cut out to fit the lens yourself or else the corners of view may be cut off. (4) A friend informs "A. J. W." that a hand-camera is incapable of certain results. This is wrong. What can be done with the ordinary camera can be done with a hand-camera of the proper type. There are plenty of hand-cameras on the market which possess rising front, swing-back, long extension, etc., such as Adams' 1894, Merlini's, Archer's, Shew's, Bruno's, etc., etc. (5) See answer to 4. (6) Wants to know whether he may send some prints up. Certainly, always glad to see all sorts of work from everybody. The statement in the post-script is, to put it mildly, a fabrication and untrue.

J. G. PATTERSON.—We have not decided about Prize Portfolio yet, but will let you know.

O'N. F. KELLY.—(1) We place as follows—6, 2, 3, 1, 4, 5. (2) 3, 2, 1. (3) We have met with the defect on all plates at times, and have always put it down to metallic impurities in the water or fixing bath.

C. S. S. wants some good formulæ for toning bromides, and wants one with iridium. So far as we know, no formula has ever been published for iridium toning of bromides. The nasty yellow stain which occurs when using uranium is due to your not washing the prints free from hypo. Send us up an address wrapper with 2d. on it, and we will send you down the most complete article yet written on the subject.

THE ROOK has made some shutter exposures on Ilford medium Iso, and wants to know the best way to develop them. The best developer is—

Amidol	5 gr.
Sodium sulphite	50 „
Water	1 oz.

You will get soft results, and can intensify afterwards as much as you like.

GUS EDWARDS.—We will lend you some prints if you send us date.

W. H. P. has measured the focal length of lens as suggested by us, and has found the focal length to be 77·77 m. The data are these: proportion of image to object, 8; distance between screen and object, 87½ in.

$\therefore$ 87·5 × 8 = 700.

700 ÷ 92, or (700 ÷ 9) ÷ 9 = 8·64 in.

Therefore the focus may be taken as 8⅝ in.

He wanted to take a C.D.V. portrait from a cabinet, and in order to get the required size the print was almost touching the lens. This is wrong. The reduction of cabinet to C.D.V. is about 2, therefore the distances would be 26 in. between lens and print, and 13 in. between lens and plate.

FLEETWOOD asks, does adding soda or ammonia to a sulphocyanide bath make the tone more neutral; if not, he wants a bath that will give a cold-black-brown tone on chloride paper. To obtain blackish-brown tones a chloroplatinite of potash bath is the simplest, and one made by adding chloroplatinite of potash 1 grain to 2 ounces of sol. of oxalate of potash, to which a few grains of citric acid have been added. When an alkali is added to a sulphocyanide bath it tends to give purple tones, but if the bath is made neutral only, not alkaline, which may be done by adding chalk to it, shaking and filtering, it is easier to obtain browns; but toning must not be carried so far—only till the red has disappeared from the half-tones and is still present in the deep shadows. Do we consider metol a better all round developer than pyro, ammonia, or soda, and is it as good as amidol for snap-shot work? Metol is quite as good as pyro-soda, and quite as good as amidol, but we dare hardly say it is better, because the circumstances vary so much.

ROUMANIA has some film negatives which are stained in the middle, and wants to know how to remove the stain. Please send us up the films; prints are no good in such a case. Prints for "Holidays with Camera" may be mounted singly or on one mount; only one set can be sent in. All our next Monthly Competitions are for slides.

CABINET.—Will not the back of the lens fit in the front of your camera? We think it will. If so, get a false front made that you can temporarily screw to the baseboard of your camera, then screw the flange of the lens on this, screw the lens into position, and insert in the proper camera front, and screw the front to baseboard. Have a short sleeve made which will fit round the camera front, and nail the sleeve to the supplementary front. Make the sleeve of black velvet, lined with two thicknesses of ruby cloth.

SINBAD has just returned from his holidays, and finds that some of his negatives are covered with a slight fog, which he ascribes to changing plates when on tour, in a room, through the windows of which shone the light of a street lamp, which was reflected by white ceiling. In the first place while possible, this is not likely to be the cause; it should be looked for elsewhere. A slight reduction with Belitzski's or Howard Farmer's reducer, followed by thorough washing and intensification, is the only remedy.

CYTOX asks, is it possible to make an ordinary camera capable of doing service as an enlarging apparatus by using a good lamp fitted in a box behind the negative? Provided it will rack out far enough, any ordinary camera may be used in this way. It is preferable to use two lamps, of the Defriez pattern, for instance, side by side, with reflectors behind them, and diffuse the light by the aid of ground-glass.

RUFUS GREY.—As far as possible we endeavour to comply with our correspondents' requests, but answering by post is one that we often have to forego. This gentleman has accidentally dropped a spot of ferrous oxalate developer on a negative, and the negative is less dense at this point. The only thing to do is to varnish the spot and treat the whole of the negative with ferrous oxalate, or else, preferably, to touch the spot with retouching medium and then work with a stump and pencil over it, so as to even up the density.

FAIRVIEW sends us an over-exposed print on P.O.P., which gives a curious appearance he cannot understand; the print is a portrait, and the flesh is red, while a black dress prints out green. The red is the usual colour of the image on P.O.P., and the green is iridescent bronzing, which always makes its appearance when silver salts suspended in any vehicle, albumen, collodion, or gelatine, is exposed sufficiently long to light. That the principal colour of this bronzing is green, is, we believe, due to the fact that silver in very thin sheets transmits light of a distinct emerald green colour, that is, it absorbs the purple, blue, yellow, orange, and red rays, and probably when a print has been exposed as long as this, there is, as stated by Romyn Hitchcock, metallic silver actually deposited. A somewhat analogous case will present itself at once to one's mind in the case of iridescent or green fog on negatives.

The AMATEUR PHOTOGRAPHER

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OUR VIEWS.

"To hold as twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

The slides sent in to our Fifth Annual Lantern Slide Competition were passed through the lantern, and the following awards were made by the judges:—

Class I.—Landscape with or without Figure.

Gold medal	Harry Holt, Liverpool.
Silver „	A. H. Webling, Brighton.
Bronze „	A. Stieglitz, New York.
Certificate	H. E. Farmer, Loughton.

Class II.—Seascape and River Scenery.

Gold medal	Withheld.
Silver „	A. Brooker, Hastings.
Bronze „	J. Shaw, Manchester.
Certificate	C. Gethen, Hereford.

Class III.—Portraiture and Figure Study.

Gold medal	Miss E. V. Clarkson, NewYork.
Silver „	S. L. Coulthurst, Manchester.
Bronze „	J. D. Lysaght, London.
Certificate	A. Stieglitz, New York.

Class IV.—Architecture, Exterior and Interior.

Gold medal	W. H. Shirley, Dukinfield.
Silver „	J. Shaw, Manchester.
Bronze „	E. R. Ashton, TunbridgeWells.
„ „	C. H. Oakden, London.
Certificate	H. N. Cooper, Stockport.
„	E. Beck, Sheffield.

Class V.—Instantaneous.

Gold medal	Withheld.
Silver „	A. Brooker, Hastings.
Bronze „	A. D. Guthrie, Edinburgh.
Certificato	J. D. Lysaght, London.

Champion Class.

Niepce gold medal ..	Edgar G. Lee, Newcastle.

Taking the slides on the whole, we do not think they are quite up to the standard of last year, and the judges, we think, wisely withheld two of the Gold Medals. As usual, the most satisfactory class is undoubtedly Class IV., architecture; the least satisfactory, Class V., instantaneous. Probably many of our readers will have opportunities of seeing them as they go on their rounds in the country.

The Photographic Salon was opened on Saturday with a private view, which was well attended. Undoubtedly, the exhibition is a very fine one, some of the older photographers going so far as to say that it is the finest which has ever been got together. Even those who have felt most antagonistic to the idea must confess this.

Although we cannot admire all the pictures, and may even go as far as to say that in our opinion some of them are distinctly poor in quality, yet these but serve to throw into prominence the good work. That the soft and naturalistic school predominates goes without saying, but it is only in a few pictures that it runs to that extravagant excess when it becomes painful and a travesty of photography.

If merely as a lesson, however, we think that every photographer should visit the Salon, for only by so doing will he be able to obtain a fair estimate of how far this particular departure is justified by the results.

Our Competitions have given rise to all sorts of curious situations and letters, but surely none more curious than one which we have received this week, and which we answer under "Editorial." One cannot help feeling a little depressed at receiving such a letter. Few of our competitors have any idea of the enormous amount of work entailed by these competitions, and to have one's efforts appreciated only as a means of getting some fun is not encouraging.

May we inform our competitors, past, present, and future, of the intention of our Monthly Competitions. It is hoped, by placing prints in three classes and giving a short criticism, to assist our readers, especially beginners in their struggles, and to enable them to ascertain to some extent how they stand with regard to other work which they have not a means of seeing.

It may possibly interest our readers if we state how our Competitions are conducted. When the prints reach us the entry form is pasted on the back, and they are all placed in a heap. The judges are generally two, sometimes three in number, and photographers of good standing and well-known workers: some of them recognised judges at exhibitions. The heap of prints is placed before them, and the prints which are distinctly poor, generally in technique and art, are thrown out first. These constitute the third class. A further weeding out gives us the second class, which usually comprises prints which may be stigmatised as "good mediocre work." This leaves generally a few prints, which are now carefully and individually examined, with the result that finally four, or perhaps six, prints are left, from which the final decision is made.

As far as possible, everything is conducted as fairly and conscientiously as possible. The names of the competitors are not known till after the judging is finished. Of course, to please everybody is an impossibility; that all the competitors should agree with the judging seems to be equally impossible, nor do we expect it, for we do not always agree ourselves with the awards at all exhibitions, for judging is and must always be to some extent a matter of personal opinion.

With regard to the criticisms, these are sometimes written by us personally, or by some competent worker if we have too much work to do. They are not and cannot always be honest, for if we were to write what we honestly think about some of the work we feel sure that the competitors would throw up photography in disgust, or else write folios of bitter invective and abuse to us. We try and hit the happy mean, and without being too harsh, condemn, and at the same time encourage.

Such letters as the one in question which has caused us to pen these few remarks, lead one to gravely consider the advisability of doing away with monthly competitions altogether. If they are looked upon by our readers generally as a means of getting a paltry medal or a little fun, in fact, of getting a rise out of the Editor—well, they do not fulfil their aim, and the sooner we rid ourselves of the extra work and expense the better for us.

What do our readers say? We shall be very glad to have a few lines from anyone, if only on a post-card. Suggestions for improvement will also be specially welcomed.

There seems to be a class of people who are fond of "taking a rise" out of others, and showing their own cleverness. Mr. J. S. Bergheim shows a picture at Pall Mall, No. 103, which is medalled, and which certainly gave most people the impression that it was on some prepared textile fabric. Last week, however, in our contemporaries, Mr. Bergheim writes to state that it is a transparency backed with ribbed yellow blotting paper, and that he hoped to be able during the exhibition to still further trick the public by changing the backing blotting paper. Evidently Mr. Bergheim considers the Pall Mall Exhibition a suitable place for a juggling entertainment, and next year we shall see pictures changing their hue with the state of the weather, as competitors to win a medal may use the same dodge and soak the backing paper in cobalt salt solutions.

Captain Abney has been appointed Director for Science in the Science and Art Department at South Kensington, and all our readers will join us in congratulating both Captain Abney and the Department on the appointment.

We print elsewhere the conditions of the Leytonstone Camera Club Exhibition, at which we note there are three open classes, and as far as possible the recommendations of the Conference have been adhered to.

We regret that pressure on our space by reason of the notices of Pall Mall and the Salon compel us to hold over several articles, notices, etc.

Flotsam and Jetsam.

The "Photographic Salon" has not come a moment too soon. The photographer is abroad, indeed, and has been abroad for some considerable time; but the amount of ignorance as to the capacities of the camera for truly artistic work is still something quite inconceivable. In its notice of the Salon, the *Times* very justly and properly discriminates "between what is purely mechanical science and what may, perhaps, claim to be allied at least to the finer graphic arts."

Note the extreme caution of the sentence. "Perhaps," and "may claim to be allied." But even this canniness is a good deal better than such a sweeping generalisation as appeared in last Friday's *Chronicle*. There it was laid down, most incautiously, that "a photograph must ever be a mechanical performance, despite the claims of the pictorial photographer."

"Invaluable, perhaps, as a record of facts, what place has it in a monthly magazine of artistic pretensions"? It should be added that the *Chronicle* was protesting "against the growing editorial preference for photographs" in the illustrated magazines, a preference which may be set against the *Chronicle's* undiscriminating declaration.

The *Times* is wiser. It points out very rightly that the pictures in the Salon show a greater freedom, more individuality, and less of the bare registration of fact than are usually associated with what we call a photograph, and questions whether a new and distinguishing term is not necessary, by

which to call the kind of photographic work which has found its highest exposition so far in the splendid display at the Salon.

Pictorial photography and artistic photography are our nearest approaches to this distinctive term so far, and neither of them is at all satisfactory. Here is a chance for those who are good at nomenclature. He who should invent a fitting phrase would undoubtedly earn the gratitude of the promoters of the Salon.

A glance at the pictures exhibited there is enough to show one thing at least—that there has been expended upon them no inconsiderable amount of the infinite capacity for taking pains which is responsible for all the best art the world has seen. More than once in this column has this condition been insisted upon as especially necessary to a photographer in view of what may be called the camera's fatal facility.

It is not necessary to go so far, perhaps, as some have done if Mr. W. H. Johnstone is to be believed. Writing in the *Sun* the other night, in an article on the amateur photographer, which contained a good deal of sound sense and a good deal of—well, the other thing—he said he had once met "five strong men, each six feet high, who tramped many weary miles carrying *one* camera, and at each turn in the road they would stop and debate the æsthetic possibilities of the scene, and after many arguments would reject or accept the view."

After three days they had taken one photograph! Well, even that is better than the shameless intemperance of the mere pea-shooter let loose in the country. Mr. Johnstone says, "As other men take a glass of beer, so he takes a view." Unfortunately, it is too often so. It is the unintelligent and exuberant zeal of the amateur. It is the sowing of the photographer's wild oats.

But there comes an end to this kind of thing in the case of the individual, though as every one is more or less of a photographer now the amount of plates wasted in mere wantonness must be something shocking. Then let us hope begins the ascent of the long steep which will lead to acceptance by the Committee of the Salon. We look for great things in this direction from the Salon. A standard is set up and all may measure themselves thereby. The results should be great, and the stimulus to the thousands who have taken to photography for artistic reasons incalculable.

Anchorite.

Reviews.

Photographisches Taschen-Lexikon. By Dr. Julius Schnauss. Published by Wilhelm Knapp, Halle a/S. Price 4s.

This little work is at once a small pocket dictionary explanatory of photographic terms, and also a vocabulary of German, English, French, and Latin technical terms. To the reader of French and German photographic literature it is not always an easy matter to recognise well-known objects and subjects under their technical terms in the foreign language, and this work will then be especially valuable.

The definitions of the German terms, though necessarily brief, are sufficiently explicit to enable the reader to grasp the real meaning. In the Latin vocabulary the names given are those usually adopted in the German Pharmacopœia, which differs slightly from those we are accustomed to use. For instance, we talk of *ferri sulphas*, whereas Dr. Schnauss gives *ferrum sulfuricum*. The English vocabulary is singularly free from errors.

Letters to the Editor.

CRYSTAL PALACE EXHIBITION.

Sir,—A few weeks since, I wrote a letter which you were good enough to publish, to the effect that the pictures loaned by the East London Photographic Society to the managers of the National Photographic Exhibition at the Crystal Palace had not been returned. I described them as lost, stolen, or strayed. They had strayed. The managers had packed them and sent them off directly after the exhibition, to our headquarters, the Town Hall, Shoreditch, which is undergoing considerable alterations and repairs; the hall keeper received them and never informed me of their arrival. When some of the building material was being removed last week, the box containing the pictures was unearthed.

I therefore ask you to insert this letter, in order to clear the managers from any blame whatever, and trust they will accept this as an apology.—Yours, etc.,

Walter R. Gould.
(Hon. Sec. to the East London Photographic Society.)

* * * *

A CAUTION.

Sir,—I should like to caution any of your readers who may be thinking of using Vevers' negative envelopes to be careful not to put any negative they value into them with the film side towards the back of the envelope. I have just had a lot of valued negatives completely spoilt by doing so. In each case in which they were so placed, the gummed stripe down the centre of the envelope has left a corresponding reddish yellow stripe down the negative. I have pointed this out to Mr. Vevers, but have not had a reply.—Yours truly,

C. W. Bassano.

* * * *

HACKNEY, SOUTH LONDON AND LEYTONSTONE EXHIBITIONS.

Sir,—To meet the convenience of exhibitors wishing to compete at our respective exhibitions, arrangements have been made whereby the exhibits will be transferred at the close of each exhibition on to the next exhibition, saving the large expense of carriage (*i.e.*, they will be sent from Hackney to South London, and from thence to Leytonstone), upon payment of 1s. 6d. for every three frames, and 6d. for each set of lantern slides, in addition to the entry fees to the secretaries of the last two exhibitions, by whom they will be received and carriage paid.

W. Fenton-Jones,
Hon. Sec., Hackney Phot. Soc.
Charles H. Oakden, Hon. Sec.,
S. London Phot. Soc.
Albert E. Bailey,
Hon. Sec., Leytonstone Camera Club.

Exhibitions.

Society.	Entries close.	Opens.	Closes.	Address of Secretary.
P. S. G. B.	Sept. 13	Sept. 25	Nov. 15	R. Child-Bayley, 50, Gt. Russell St., W.C.
Hamburg	—	Oct. 1	Oct. 31	Das Ausstellungs Committe, 33, Schwanenwik, Hamburg.
Photographic Salon	Sept. 27	Oct. 9	Nov. 11	Sec., 215, Shaftesbury Avenue, W.C.
East London	Oct. 10	--	—	W. R. Gould, 61, Gibraltar Walk, E.
Hackney	Sept. 30	Oct. 17	Oct. 19	W. Fenton Jones, 12, King Edward Road, N.E.
South London...	—	Nov. 7	Nov. 11	C. H. Oakden, 53, Melbourne Grove, Dulwich, S.E.
Leytonstone Camera Club ...	—	Nov. 20	Nov. 25	A.E. Bailey, Rose Bank, South-west Road, Leytonstone.
Stanley Club	Oct. 31	Nov. 17	Nov. 25	W. D. Welford, 57 Chancery Lane, E.C.
Madras	—	Dec.	—	Hon. Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28, 1894	113, West 38th Street, New York.
Midland Camera Club ...	Sept. 20	Oct. 2	Oct. 14	C. Jevons Fowler, 4, Woodstock Rd., Moseley, Birmingham.

EDER'S HANDBOOK
OF
Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER II.

(*Continued from page 224.*)

(C) CARBONATE of silver (Ag_2CO_3) is formed as a yellowish precipitate by mixing solution of nitrate of silver with carbonate of soda solution. The same is blackened by light, and is decomposed even by itself by boiling with water, as it is converted partly into oxide.

Monckhoven first proposed in 1879 mixing carbonate of silver and hydrobromic acid, so that one could use the emulsion without washing; oxide of silver is not so good. Monckhoven himself later discontinued this method, and others also obtained no good results with it. If carbonate of silver is prepared by mixing dissolved carbonate of soda and nitrate of silver, the precipitate washed, and heated with bromide of ammonium and gelatine, bromide of silver is formed with the evolution of ammonia. This unwashed emulsion shows 15 to 16° Warnerke, and gives thin negatives; by keeping, the plates show fog, which gradually becomes stronger. If, on the other hand, it is washed, an emulsion is obtained free from fog.[1] Holland proposed to heat the carbonate of silver with bromide of potassium and as much acetic acid as was necessary to expel the carbonic acid from the carbonate of silver.[2]

Henderson[3] strongly recommends a similar method to the above as avoiding any possibility of green fog, because the nitrate of silver does not come in contact with the gelatine. Bolton[4] also suggests the use of carbonate of silver with excess of carbonate of soda for the preparation of very fine-grained, clear-working emulsions (see also Chap. XVII.).

(D) *Ammonio-carbonate of Silver.* — If a solution of nitrate of silver is mixed with carbonate of ammonia, there is formed first of all a yellow precipitate of carbonate of silver, which is again dissolved in excess of the ammonium salt; from which escapes even in the cold much carbonic acid. Probably $Ag_2CO_3.4NH_3$ is formed.[5] A good solution is obtained by mixing one part of nitrate of silver and one part of carbonate of ammonia and twenty parts of water, and heating for a short time till the effervescence subsides. This solution is used like ammonio-nitrate of silver, and one obtains 15 to 17° Warnerke by digesting at 40° to 60° C. from half to one hour.[6] This solution was introduced by Dr. Eder in the year 1883 for emulsion making,[6] whilst Dr. Székely dissolved freshly precipitated carbonate of silver in caustic ammonia, and prepared bromide of silver emulsion with the same.[7]

(E) Silver acetate ($AgC_2H_3O_2$) is formed by mixing silver nitrate with acetate salts; it forms white crystalline needles, which dissolve in 100 parts of cold water. Henderson found it useful in emulsion-making; but this salt has found no general application.[8]

(F) Silver citrate ($Ag_3C_6H_5O_7$) is formed in small quantities by mixing citric acid with silver nitrate, on the other hand plentifully if one uses citrates instead of citric acid. It forms a white crystalline precipitate, which is difficult to dissolve even in boiling water, but is easily soluble in ammonia. The presence of citrate of silver was first introduced by Obernetter in his cold emulsion process. Dr. Eder published in 1889 a process in which citric acid was added to nitrate of silver and then mixed with ammonia, by which means first of all a white precipitate was formed, which was dissolved in excess of ammonia. This solution gives emulsions free from fog, as the citrate acts as a preventive of fog (see Chap. VII.). Compare also Chap. XVII. on citric acid, and in the chapter on "Printing Processes on Paper."

(G) Silver chromate (Ag_2CrO_4) is formed as an orange-red precipitate by mixing chromate of potash with silver nitrate. Chromate of silver was used by Biny in ammoniacal solution, and a solution of bromine in diluted alcohol with pretended success for emulsification. Such emulsion must be insensitive to light (as pointed out by Edwards), and plates coated with the same must only be sensitive after washing with water[9] (compare Chap. VIII.).

(H) Silver fluoride (AgF) is formed by dissolving oxide of silver or carbonate of silver in hydrofluoric acid—*not, however, by mixing fluoride of sodium or potassium, etc., with nitrate of silver.* It forms a salt, stable in light and easily soluble in water, which up to the present time has been tried very little in the emulsion.

(I) Silver bromide (AgBr) is known in several modifications, crystalline as well as amorphous. Bromide of silver dissolves in ammonia considerably more easily than iodide of silver. About one part of freshly precipitated bromide of silver is dissolved in one thousand parts of concentrated aqueous ammonia; but if the precipitate be once dried only half this quantity dissolves. It is soluble, in solution of potassium bromide, especially when warmed, less so, however, than iodide of silver in solution of iodide of potassium. Saturated solution of potassium bromide dissolves about 3 per cent. bromide of silver, solution of bromide of ammonium double that amount. On the addition of water or in the cold the bromide of silver is again precipitated. From the ammoniacal solution the bromide of silver crystallises in small plates, which, according to Rammelsberg, should be free from ammonia; according to Liebig, however, should contain ammonia. Elsden has studied more accurately the behaviour of bromide of silver with ammonia.[10]

Freshly precipitated bromide of silver is yellowish. Covered with ammonia (sp. gr. ·880) it immediately becomes white, and remains so even in daylight till the solution is saturated. From this solution the salt can be separated in several forms. If diluted with five parts of water, almost all the bromide separates out, and is seen under the microscope in transparent crystals of all the possible gorgeous colours and varied shapes, of which those most frequently occurring are sketched in Fig. 1:—



FIG. 1.—CRYSTALS OF BROMIDE OF SILVER.

The crystals are from ·03 to 0·25 mm. in size, and at the most ·0012 mm. thick; almost each has its own particular colour, and they do not influence polarised light if lying

[1] *Brit. Journ. of Phot.* 1883, pp. 41 and 71.
[2] *Brit. Journ. of Phot.*, 1883, p. 88.
[3] *Photo. News*, 1891, p. 711.
[4] *Bull. Soc. Franc.*, 1891, p. 116.
[5] *Eder, Phot Corresp.*, 1883, pp. 89 and 167.
[6] *Photo. Corresp.*, 1883, p. 89.
[7] *Photo. Corresp.*, 1882, p. 262.
[8] Henderson dissolved (*a*) silver nitrate 8 parts in 150 water; (*b*) 73 parts carbonate of ammonia were neutralised with acetic acid and made up to 150 parts with water. Both solutions were mixed, then 60 parts potassium bromide and 1 part potassium iodide added, and allowed to settle. The precipitate was washed with water and emulsified with 12 parts of gelatine, dissolved in water, and some ammonia. (*Brit. Journ. of Phot.*, 1884).
[9] *Moniteur de la Phot.*, 1882, p. 122.
[10] *Photo. News*, 1881, p. 174.

flat. They are quite stable, except in the strongest sunlight. Ammonia and hyposulphite of soda dissolve the crystals to a fine brown tint as if they consisted of subbromide. If the original solution is diluted with only an equal quantity of water, the crystals are precipitated in the annexed shapes (Fig. 2).



FIG. 2.—CRYSTALS OF BROMIDE OF SILVER.

They are colourless by transmitted light, but reflect the most gorgeous colours. In polarised light they appear strongly double refracted, since they change from dark to light four times in one revolution of the crystals. Their colour is chiefly a dull lavender blue. These crystals are decomposed at quite a low heat, almost immediately by contact with water or acids, and leave behind yellow bromide of silver, which in light quickly becomes dark. Evidently the crystals consist of a very loose combination of bromide of silver and ammonia. If, instead of, as in these two cases, using quick evaporation, the solution is allowed to evaporate for several days, very bright green octahedral or cubic octahedral crystals are obtained. After a longer time they become darker in daylight, and are changed into subbromide.

Finally, there is precipitated also granular bromide of silver mixed with all the above shapes, which, however, is much more sensitive to the action of light than the original crystals. These peculiarities may be closely connected with the action of ammonia on bromide of silver emulsions.

(K) *Chemical Properties of the Various Modifications of Bromide of Silver.*—The works of Stas give some explanation of the pure chemical properties of the modifications of bromide of silver.[11] Stas distinguishes six different modifications of bromide of silver:—

1. The flocculent modification; (*a*) the flocculent white, (*b*) the flocculent yellow state.
2. The powdery modification; (*a*) an intense yellow powder, (*b*) a pearl-white powder.
3. The yellowish-white granular modification.
4. The crystalline or fused intense clear yellow modification.

(To be continued.)

Pictorial Photography; its Principles and Practice.

BY A. H. WALL.

CHAPTER VI.

SKIES AND AERIAL PERSPECTIVE.

CONTINUING the consideration of light and air, let us turn to both in yet another of their very varied manifestations—that which artists call aerial perspective.

It used to be commonly urged against photographs—that they did not truthfully represent effects of perspective, either aerial or linear; that they were one-eye pictures, and that binocular and monocular representations were naturally different; that their distances were exaggerated, foreground objects too large, middle distances too crowded, and distant objects too small, etc. Yet all this was but a question of tools and their uses. Its fallacy was sufficiently demonstrated without learned and scientific theories by the simple fact that some photographs represent nature faithfully, while others justify such accusations fully.

[11] "Annal. der Chim. et Phys.," vol. 5, p. 1874.

Again, it has been urged that photographs cannot be truthfu because rays of light coming from yellow, green, and red are not so quick in their chemical action as rays reflected by blue or purple are. Here, again, the best reply is the production of photographs in which the tones of blue and orange are, through the compensating, compromising, manipulative skill and knowledge of some clever operator, represented together side by side with their just equivalents in tones. These matters are not questions of scientific theory and mechanical tools so much as they are of practice and artistic study. If the photographer is a master of his art technically, and also knows what he wants, and how to aim at it artistically, the chances are in his favour. He is *not* the slave of his tools. He is their master!

While writing this I have been thinking of an author I have already quoted more than once, P.G. Hammerton. He is describing in 1862 how he compared one of Gustave le Gray's marine photographs with Holman Hunt's lovely little picture called "Fairlight Downs—Sunlight on the Sea." In the photograph, he says, "the blaze of light upon the sea is given with perfect fidelity; but in order to get this and the light on the edges of the clouds all else has been sacrificed; the shaded sides of the clouds, in nature of a dazzling grey, brighter than white paper, are positively black in the photograph, and the pale splendour of the sunlit sea, except where it *flashes* light, is heavy and impenetrable darkness. Towards the sides of the photograph the distinction between sea and sky is wholly lost in one uniform shade of dark-brown, extending from top to bottom without any indication of a horizon. . . . The crowning falsity is the sun itself, which is *darker* than the surrounding clouds, being simply a grey wafer on a white ground." Turning from the photographer's to the painter's work, he says, "The sunlight itself, in its broad, white glare on the water under the sun, and its gradual scattering into glitter to the right hand and the left; in its long lines in the distance, divided by the shadows of clouds; in its restless flashings on the crests of the little waves far away, is as true, or truer, than the photograph; but here all comparison ends, because there is no longer in the photograph anything to be compared with the picture. Where the photograph is simply dark-brown, the picture is full of the most delicate gradations and the sweetest play of tone. Where the glitter is not we have still the sunlit beauty of the fair sea, which is indeed better and more precious even than the glitter itself, just as the fairness of a beautiful woman is better than the glitter and flash of her diamonds. And there is a hot haze in the blending distance miles away, and there is a sultriness in the accumulated clouds which shall light up the sea at night with another and a more terrible splendour. All these other facts Hunt could get into his picture 'because painting is a great intellectual art; an art of compensation, and compromise, and contrast, an art capable of moderation and subject to mastery.' And all these other facts Gustave le Gray could *not* get into his photograph, because photography is not a fine art, but an art science, narrow in its range, emphatic in assertion, telling one truth for ten falsehoods, but telling always distinctly the one truth that it would be able to perceive."

The fallacy of this mode of reasoning will be at once seen if you remember the unfairness of the comparison. Hammerton takes, in the first place, the production of a perfect master in art, and compares it as an artistic production with the work of one who would never have asserted that he was the equal of Holman Hunt. He puts a comparatively new producing process, full of difficulties and drawbacks, and one still passing through infantine stages of experiment and discovery, in contrast with a very old one, which has been the outgrowth of centuries of progressive practice. He forgets that productions of the very art he glorifies so proudly, that practised by Holman Hunt, could be produced vastly inferior to Gustave le Gray's photograph. Look at the vast difference there is between photographs of light, air, and perspective produced

now and those produced in 1872, and then tell me if that alone is not sufficient to demonstrate the lofty possibilities of their producer's art-science, when it is cultivated as "an art of compensation and compromise and contrast, an art capable of moderation, and subject to mastery."

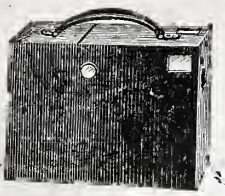
Mr. Hammerton has, perhaps, seen, since he wrote in '72, how cleverly development can now be here or there arrested in the dark-room to *compensate* for the over and under exposure he complained of as unavoidable necessities, how much may be done with a printing frame, how skilfully a *compromise* may be secured in the camera by judicious selections of time and points of view in the exercise of that very *moderating* power which he speaks of, and how easily the practised photographer who is governed by artistic knowledge, taste, and feeling, manages to bring his negative somewhat near the picture he carries in his mind's eye from nature. And when photography is practised as fine arts are, not as a mere amusement or an uninteresting mechanical operation, but as a serious, life-long, difficult art; when in the superior works of great artists you see inspiration, not despair, then we may have photographic Holman Hunts, whose productions shall rank by general consent as genuine fine-art productions. Then will be the time to look out hopefully for all those grander, more intellectually suggestive, and larger poetical truths in a photograph which we find in Hunt's glorious little painting of "Sunlight on the Sea." That will be the time in which to set up such comparisons as Hammerton's.

But let us go back to the defects he complained of in Le Gray's picture as compared with Hunt's. I think you may see that they chiefly revolve themselves into a want of aerial perspective, or, in other words, a want of light and air. A well-known artist (Mr. A. Liebert), referring to this subject, says:—"One of the greatest difficulties of the landscape photographer is the production of skies with natural clouds, because the light, from its great strength, destroys all the cloud shadows by solarisation: the result is skies whose uniform whiteness produces a monotony which deprives the landscape of its aerial or natural perspective; all the delicate tones produced by distance and the reflections of the clouds disappear, and the image thus loses a great part of its artistic value." And this it does by destroying harmony and unity of effect, by introducing destructive contrasts, putting bright, staring, flat, blank white where space representing delicate tones of soft grey should gently and tenderly blend the horizon and distance, instead of separating them violently and harshly, destroying cruelly not one noble truth but many.

When writing for the young in art I like them to know that the opinions I have formed and the suggestions I have found are strengthened by the fact that they are not mine only. Therefore I quote other authorities who have been generally accepted as trustworthy and practical, and without apologising for so doing. In a cheap and not particularly comprehensive little work on aerial perspective, written by a professor of perspective, Wyke Bayliss, he says "The great object of aerial perspective is to enable the painter to give his work that effect of light and shade and colour" (for the last-named the photographer must read tones or values) "which in nature is accomplished by the various objects of which the scene to be represented is composed"—by which is meant, I presume, the different degrees of prominence and subordination of one to another, as well as the obtaining of truths of form, effects of contrasts, a proper balance of parts, harmony, transparency, grace, and force, so he says. In securing any or all of these, aerial perspective may certainly be useful. By putting more or less air between your camera and certain objects too prominent, or not sufficiently so, you may often make wonderful alterations in the general pictorial effect. Something that is aggressive and impudently bold, distracting the eye where you desire it should be attracted, may, when the light has changed, and the air with it, become very quiet and inoffensive. In this way often the full rich variety of tones and forms which have so much to do with beauty may be secured. At another time by selecting one kind of aerial effect in preference to another, you may give the heroic part of your composition a crowning glory, and by mere contrast render objects that were in dangerous rivalry with it meek and retiring accessories. I shall now leave you to follow up this, and proceed to another consideration—the point of view.

The amount of air which should be between the landscape painter and the base line of his proposed foreground is generally estimated at fourteen feet, to secure a transcript having forty-five degrees, and bring within the top and bottom of it any object not of greater height than sixteen feet, whatever the picture's size may be. But in photographing, this law will be affected by the lens used and the character and kind of foreground desired. Photographs may, however, be cut, and anything undesirable in immediate foregrounds may therefore be very easily removed by reducing their size. Another consideration connected with aerial effect to be observed by the student in selecting time, place, and scene, is the radiation of light at different hours and conditions and from various surfaces. These sometimes generate appearances of which you may often avail yourself with good effect. J. B. Pyne says of this, an artist finishing his painting of a tree without having the original before him might easily spoil it, "not so much for want of knowledge and power over the local character of the object itself as from a want of those modifications of local character resulting from the presence of a strong light and its different phenomena, radiation and reflection, and the distinction of those parts under partial, and those under perfect obscuration a tree, although the foliage of both sides is equal in density; nor on the lighted side will the small twigs be seen, nor scarcely the next larger branches; indeed, all on this side will appear somewhat suffused and hazy, while on the darker side every branch, twig, and leaf will reveal itself with beautiful precision against the sky." But bring this shadowed part of the tree by change of position against a brilliant sunlit cloud, or let the sun be seen shining through it, and the dazzling radiations will make *it* as uncertain in its outlines, and blot out *its* details of stem, twig, and branch. In like way radiations act in other portions of the landscape, although they are less perceptible, being modified by aerial perspective. In some of the landscape etchings of Rubens these effects figure so often that one fancies he must have particularly admired them.

In all these aerial effects to which I have so far called your attention you will find useful suggestions. All of them should be observed as tests and for comparison. If you find them in nature and not in your photograph, ask yourself why they are absent. I feel sure that you will then be on the right road to secure them. But always remember what the great R. A. Leslie says of landscape:—"Rocks, trees, mountains, plains, and water are the features of landscape, but its expressions are from above; and it is scarcely metaphorical to say nature smiles, or weeps, and is tranquil, sad, or disturbed with rage, as the atmosphere affects her." "And yet there are," as Leslie also says, many landscape painters who seem "as if they had never raised their eyes above the horizon; and among the proofs of the indifference of those who interest themselves in art to the beauty that canopies the earth may be noticed that although the composition and light and shade of clouds are as much within the reach of the photographic art as any of the other great things of nature, they are her only beauties it has hitherto entirely neglected. I have seen but two calotypes of skies, and these (taken by my friend Mr. Thurston Thompson) prove that it is from no want of power in the process that skies are not as common in our photographic exhibitions as any other subjects." Turner's transcendant power of expressing atmospheric pheno-



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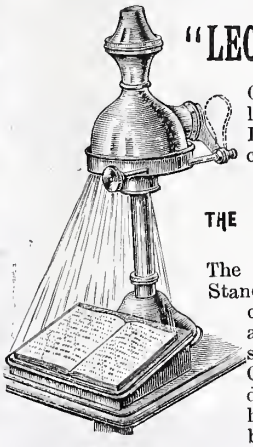
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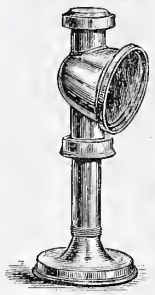


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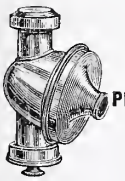




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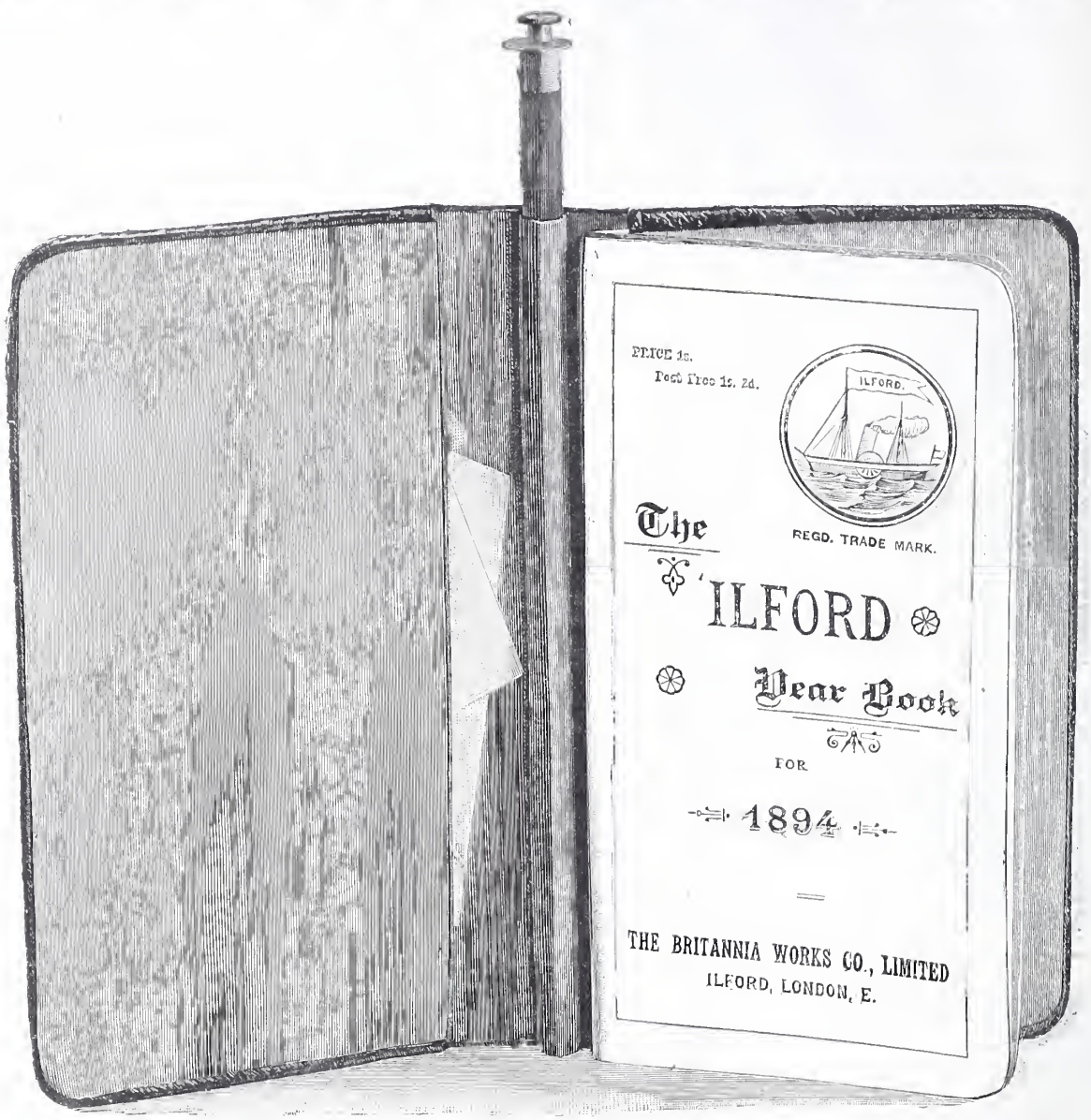
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mena more than atoned for eccentricities that would have ruined a lesser man, and Constable spent entire summers in painting skies from nature. In a letter to a friend, dated October, 1821, he says:—"I have done a good deal of skying, for I am determined to conquer all difficulties, and that amongst the rest. That landscape painter who does not make his sky a very material part of his composition neglects to avail himself of one of its greatest aids. . . . It will be difficult to name a class of landscape in which the sky is not the key-note, the standard of scale, and the chief organ of sentiment."

And now I think we may leave earth, air, and light to dwell in my next chapter upon an element of the picturesque of no small importance—I mean water, in the photographing of which a disregard of truth and neglect of beauty is as common and as reprehensible as have been the neglect of skies and aerial phenomena.

Photographic Society of Great Britain.

THE PICTURES—(*continued.*)

103. "The Proud Turk," by J. S. Bergheim. This is a curious picture which looks as though on some textile fabric; the whole is tinged with an intense bilious yellow tint, which may be artistic, but does not please us.

106, more coal-mine work, by Herbert W. Hughes, which is possibly not quite so successful as that of Mr. J. C. Burrow, but the most striking picture in the frame is "Testing for Gas;" the relief and solidity given to the figures of the two men is marvellous.

107 and 108, little bits of prints, smaller than a quarter plate, by W. Thomas, from which we wish a few of our hand-camera competitors would take a lesson in what uses the hand-camera may be put to.

110, "Tewkesbury Abbey," is a good example of fine architectural work, by Harold Baker, the carbon enlargement by the Autotype Company doing the negative full justice.

112, "The Reedy Pool," by W. Wainwright. Except for its colour, which is rather warm, we like this as well almost as any pure landscape in the exhibition, and think it certainly should have been medalled.

116, "You Stupid Boy," R. H. Lord. Tells its own tale, the shrinking, half-frightened boy with eyes shut, the village pedagogue with his upraised hand, requires no title to point the moral.

117, another of Terras' interiors, and superior to 10 in our opinion.

121, 122, J. N. Hignett, are rich and warm, almost too warm in fact, but distinctly good in gradation.

125, "A Sedgy River," by J. H. Avery, an exquisite little bit that pleases us immensely.

126, "The Old Lock," by F. P. Cembrano, jun. This is a good example of this worker's usual style; soft, and full of atmosphere.

127, "Across Blackdown," by B. Gay Wilkinson, is an exceptionally pleasing little picture, and represents a road, evidently uphill, with a team of horses, and a heavy load of wood, scotched for a blow.

130, 131, 139-141. Some more of W. Thomas's happy little shots, of which 140, "Our River—Evening," pleases us best.

135, a frame of capital hand-camera shots, by W. S. Anderson. As one walks round the exhibition, one cannot help being struck with the very large number of hand-camera pictures, and most of them of excellent technique and artistic merit.

136 is a frame of six interiors which one hardly needs to look at the catalogue to tell that they are by that master of interior photography, R. Keene, of Derby.

143, 144 are two landscapes with figures, by H. Tolley, but hardly, we think, up to his usual standard.

145, a carbon enlargement by the Autotype Company, is noticeable for the good rendering of the breaking wave.

147-150 and 159-162. Some of Karl Greger's exquisite little half-plate chloride pictures, of which 149 pleases us best.

151-156 are all studies in red carbon by various workers; and 156, by H. Bullingham, is exceptionally fine.

167, "A Moorland Mill," by F. P. Cembrano, jun., is a fine carbon print, but just a trifle heavy in the foreground; but 168, "Evening Glow," by the same worker, is certainly one of the warmest and most full of glow prints we have seen, and the effect is very fine.

179, "Homeless," by C. M. Wane, is well in keeping with the title, and the expression on the face is good.

181, "Cattle in Stream" is the happiest, in our opinion, of Mr. Dresser's work this year.

189 and 197, some of Harry Sandland's animal studies, good as ever, but the best decidedly the huge tiger playfully rolling on his back.

193, "Evening," by R. L. Kidd, is an exceptionally happy carbon enlargement, happy both in selection and technique.

We now come to a lot of good work which yet is of not surpassing interest. 199, 201, and 203 are particularly noticeable, and Mr. Sinclair's portrait of an old man is a fine study.

213-223 and 237-445, figure studies by Count W. von Gloeden. Here we have some excellently posed studies, both in the nude and draped.

241, which takes a medal, almost recalls Alma Tadema's well known figure-studies. Most of these are, as is evident from the shadows, taken in blazing sunshine, and yet there is not the slightest hardness or harshness in the shadows visible anywhere.

225 and 226. These will at once attract attention, not only for the number of prints in each frame, but also for the story they tell, and 226 is charmingly droll.

248, gains a medal for Mr. Howson, and is a rich warm enlargement, representing a dead or oily calm sea with a schooner in the foreground, with heavy clouds and a long lane of light. We have not the slightest fault to find with this, but who was unkind enough to hang the blue carbon print in a silver frame just above it? The two kill each other.

252, "The Ferry Girl," by B. Gay Wilkinson, strongly recalls some picture, and yet we cannot say what; it is simple and effective, and a striking contrast to 254.

254, "Waiting and Watching," by Miss Emma J. Fitz—medal. We had to look twice, and actually had the audacity to ask whether the magic label had not been put on in error. This print is a half-plate chloride print and represents a peasant or fisher girl seated right in the centre on a something or other which cuts the picture right in two across. One hand is shading her eyes, the other holds a distaff or something else, but really it is such a bad print that one can only guess at what is meant. It is, we should say, a fearfully under-exposed negative, and we can at least say, it is a bad print technically. Every one was asking why it was medalled, and the only answer obtainable was "that it was given a medal because there was no wooden spoon to adorn it with."

257, 259, 266, some of Downey's now well-known art studies, so charmingly reproduced in collotype by Marion and Co.

Mrs. Main, as usual represented with some of her well known snow scenes, and also this year some good cloud studies, but both are spoilt by eccentricities of framing.

285 is a good picture of hoarfrost, by J. Samuels, but is badly hung.

279, 303, and 307, by Tom Bright, are some exquisite little studies, and well worth attention and careful study.

315 will at the present time, when telephoto lenses are attracting so much attention, be interesting and instructive.

320-326, two sets of platinum prints, by A. W. Dollond, require some explanation, as at present no one but the exhibitor knows what is meant.

324 is a carbon enlargement of the west front of Exeter Cathedral, from a quarter-plate hand-camera shot by Mr. Birt Acres. This will surely prove the truth of the saying that a good enlargement will beat a direct print hollow; for fineness of detail and technique this could not be beaten.

334, "A Yacht Race," from a negative by Symonds and Co., carbon enlargement, printed in colours, by Elliott and Son. This picture is undoubtedly as deserving of a medal as any in the room but then probably it was considered too much an imitation of water-colour. It represents three yachts, almost behind one another, and the boats are printed in brown, the sea in green, and the sky and distance in blue, with an effect which will at least catch on with many carbon workers. It undoubtedly opens up a very wide field for new work. But—the trouble and difficulties! The average worker is going to lift his hands aghast.

Some good lantern-slides are shown, the most striking from an educational point of view being those on Bee Keeping, shown by Mr. Alfred Watkins. Mr. Freshwater's series of the Tower of London are good too; and of the others we prefer those by Messrs. Hankins and Gear. On the same table will be found two cases of ceramic enamels, one by Mr. George Pendey, and the other by Mr. A. Guye, the latter being fine examples of the well-known Esmail Enamels.

The *Gentlewoman* has issued a special double autumn fashion number, which contains a good deal of matter interesting to ladies. A special double-page supplement, the first of a series, contains portraits of all the marriageable Princes and Princesses of Europe.

At the Dudley Gallery.

BY DEM KRITISCHEN AUGE.

THE journalistic and literary worlds have recently received the opinions of a Master upon the disadvantage of anonymous criticism, and yet on an occasion like the present I am aware that a conscientious endeavour to fairly and without prejudice review the Exhibition at the Dudley Gallery must suffer from the fact of its being made by one who is a partisan in, or else an antagonistic to, an undertaking which, to say the very least of it, is far from proving the fiasco which some may have foretold.

I will not attempt to decide the measure of success which has attended the efforts of the little company of photographers whose aim and desire is to advance the practice of photography solely as an art, but from the many expressions of approval which one has listened to during the past few days, I may glean the following: "A great success," "A really very fine show," "A complete triumph," and then by way of contrast, "That wretched Salon!" It's a good old fable, that of the children sitting in the market-place whom nothing would satisfy. For my part I will leave my readers to go and judge for themselves, and will with their permission be their self-constituted guide. There can be little doubt as to the sincerity of purpose in the Dudley Gallery collection, and hence it may be viewed not as a mere show that shall entertain, or an exhibition which may interest, but should be turned to good and instructive use by those who, like most of my readers, are themselves practising photography with more or less serious purpose; and as a catalogue of the three hundred works is purchasable for sixpence, I hold myself excused from mentioning each and every picture, nor even any considerable proportion of them. It is questionable whether there exists anyone who from every consideration is qualified to authoritatively condemn the earnest and intelligent photograph of another, for if himself a practical worker he will have his own fashion of doing things, and if sincere would with limitation have all men follow him; and if not himself a photographer, where is he that has adequate knowledge of art, an all-varied acquaintance of Nature, and an artist yet unprejudiced as to the artistic claims of photography and a knowledge of its methods?

The student of art and photography has met me in these columns before, and has been very kind to me. Stand now, good friend, and consider carefully Mr. Eustace Calland's "An Orchard in June" (No. 14). Dreamed they ever of this sort of thing in the photography of yore? Remember all you have ever heard or read about "values" and "relative tones," and see how very much of it is here exemplified. Recollect if you can the cloud of white blossom which snow-like mantles the orchard trees under the bright sunshine of midsummer; recall the appearance of the white clusters on almost leafless branchlets as they appear *light against the background of a deep blue sky*. Reflect a moment as to how the photographic plate and print will usually falsify this, and unless guided by sustained *intention* through the entire process, will make no distinction between the colour of blossoms and of sky. Then, again, how rarely shall we find in photography the *value* of sunlit grass as well preserved as here; green grass nearly always reproduces too dark. And the none more point; note that the cast shadows are *transparent*, that is to say, the sun is throwing on the ground the shadows of the tree stems, but everywhere in the shadow areas are objects clearly visible. Note this, and recall it when next abroad in sun-lighted pastures. When the sun shines, objects in shadow do not become darker, but all around become lighter than before.

These results are not obtained by chance, but by thoughtful care and labour. Result, truthfulness and a thing of beauty.

But Mr. Calland's clever picture is not the only very good thing we have to see.

Immediately above is "A Breaker," by W. P. Marsh, a towering column of surf rushing in from the shallow water of a half tide.

Breaking waves have ever been favourite subjects with the photographer, and yet there's great danger in it, and a pitfall into which most photographers unconsciously slip. With subjects of this class an effective and attractive result is easily secured, and the better judgment often blinded thereby; the pleasure of success in securing the image of the monster wave and grandly curling breaker makes us forget or treat too leniently those black and solid shadows so difficult to avoid, but which enter not into the constitution of weathered waters, luminous as silver, transparent as glass. In Mr. W. P. Marsh's picture a successful and useful example is seen, and to many it is a pleasing picture.

The question as to the colour of the printed image is one that has always greatly exercised the minds of photographers, and probably very few of my readers will be able to accept Mr. J. Craig Annan's two red prints, Nos. 5 and 18, entitled "Sheep" and "Labour, Normandy," with complete satisfaction. If we, however, succeed in accustoming ourselves to the so-called "red chalk" colour it may be we shall find that in avoiding dark browns and blacks we have also escaped the solidity and heaviness of the typical photographic shadows, added to which is a warmth which is not unpleasing, but to see this artist (for who can deny the title in the presence of his Nos. 117 and 123?) at his best we must wait until we get to the further end of the Gallery. Bright and glistening is Mr. J. B. B. Wellington's "A still delight steals o'er the earth," but that its brilliancy is also violent and its reflections rich, though they are too deep.

On this wall, too, are two winter subjects, "Drear December," by Mr. John A. Hodges, and "The Breath of Winter," by Mr. Alexander Keighley, both of which we have had opportunity of commending on a previous occasion. Snow, frost, and the hazy winter's atmosphere are things to which photography in skilful hands does particular justice; both these pictures are good.

Before leaving this group we must turn from outdoor subjects to the figure studies of M. Hector Colard, who, resident in Brussels, takes an enthusiastic interest in the modern development of photography in this country, and was the moving spirit in promoting the recent Brussels Exhibition.

With considerable skill, in "Songerie," the long flowing lines of figure and drapery are arranged, and give a classic air to the strongly lighted figure. In "Douleur" we have an arrangement of figure as powerful in the idea it conveys as it is courageous. Both these figure subjects may be taken as wonderfully successful examples of how it may be possible to impart ideality into figure subjects, and by arrangement and treatment convey a powerful sentiment which shall make the spectator entirely oblivious of the fact that it is a photograph of a living model. How difficult to attain this is, is seen only too clearly in the hundreds of so-called genre and figure subjects with which everyone is familiar. Mr. Hector Colard has also "Fantaisie," No. 24, in which also an idea rather than a reality is cleverly conveyed.

Mr. H. Van der Weyde's powerful dramatic style is well exemplified in the full-length "Hypatia," a small replica of the colossal work exhibited at Chicago. Standing at the foot of the statue of Apollo, the figure in strong relief conveys unmistakably the idea of appeal, and Mr. Van der Weyde is too clever an artist with methods other than photography not to assist the effect which good lighting and posing have given.

It is difficult to explain what there is in Mr. Hay Cameron's "Brother and Sister," No. 46, which elevates it from among the crowd of child portraits. It is simple and contentful, and no inquiry as to whose children are they ever seems to cross one's mind.

Conspicuous in the next bay or recess are the works of Mr. H. P. Robinson. There must be something very real in the merit which has become and has continued for so long world-wide, and one is glad to have foresworn the office of critic when confronting the work of a veteran. Whether Mr. Robinson, senior, has ever done anything better or equal to some of his productions of four or five years ago needs not to say. His position exposes him to the fiercest criticism, and may be he has made the world overwise as to his methods of working. He has done much, and very much is, therefore, expected. When you and I, good reader, have attained to his reputation, may we stand the test as well! "Weary Waiting" is, perhaps, the pleasantest of Mr. Robinson's exhibits. The girl figure is very picturesque, and the pose is easy and natural. It will be useful, perhaps, to note how entirely the figure, which is, of course, the *raison d'etre* of the picture, absorbs entire attention, and is yet saved from isolation by the railing of the bridge. All else is well subjugated and subdued.

The student would do well to sketch down roughly the little group of figures in "Preparing for Shrimping," and notice the introduction of the child's head and shoulders between the figures of the seated man and woman. It is a charming little group, even if the rest of the picture shows rather less of Mr. H. P. Robinson's customary skill.

And, notwithstanding the three large pictures by the same hand, which occupy and give character to the entire section, one must pause and enjoy the clear and liquid shadows in Mr. F. M. Sutcliffe's "Scotch Boats," the dainty execution in Mr. Tom Bright's "The Team's Return," and further on his "Twilight Land," and a brilliant little bit of white sail, grey water, and clouds called "A Fair Wind."

Learn we something, too, from the two sea-shore studies by Mr. P. Martin, "Anger" and "Homeward Bound," in which there is no doubt as to the breaking waves being water.

And here, too, the iconoclasts of the newer schools have done wisely in hanging six of Colonel J. Gale's characteristic picturettes. Chief miniaturist amongst photographers he has had many imitators, yet stands alone.

I promised not to mention many, but rather to select some few examples, but it is difficult to erase one's recollections or to ignore one's notes, and so let the following be merely noted where restricted space forbids much writing:—

"Meditation," F. Seyton Scott.
"Portrait," Dr. P. H. Emerson.
"The Voice of Silence," Shapoor N. Bhedwar.

And if it be remarked that the only contribution from Mr. Alfred Maskell is "Toccata," which he has exhibited previously, one may well remember his onerous duties as Honorary Secretary, and quote for him the well-known inscription within St. Paul's Cathedral, "Circumspice."

The reader must by no means overlook a tiny reddish picture, No. 90, "On the Danube," in which the tone, and, one feels inclined to say "handling," of the foliage is so painter-like.

A very noticeable feature in the Exhibition is the method of hanging, and the greater preponderance of dark frames and mounts. The monotony of a flat wall is decidedly broken with slightly projecting piers, and each recess thus made has been treated separately. A centre is formed by some conspicuously good work, which thus holds a place of honour; nothing is skied, and very little is below the dado.

A kind of silent admonition is conveyed to those photographers who will use white mounts, by hanging all such in one group by themselves, and the advantage in every way of dark frames and dark mounts, or the omission of mounts altogether, to the room generally, to the pictures individually or *ensemble*, cannot but be strongly felt. Painfully garish by daylight or gaslight are the wide, white margins, soft and subdued the dull hues of brown, black, and green. There is some influence of fashion in the matter of framing, but there is art in selecting a suitable mounting for one's pictures, and not a few useful hints in this very practical department may be gleaned.

Now, to consider the next group of pictures, all in sombre and dark framing, and chiefly the work of Mr. Bernard Alfieri, Mr. Ralph W. Robinson, and Mr. Craig Annan. Hardly justifying its central position of honour is "Chrysanthemums," a full-length child portrait, and on either side "Fishers' Wives" and "A Utrecht Pastoral," by the last-named artist.

There is nothing better in the entire Gallery than "The Utrecht Pastoral," which is generally accepted as being produced under the influence of Hobbema. Be this as it may, it is vividly reminiscent of the Dutch master. It is one thing to be brought face to face with a picture selected as this has been, and quite a different thing to be confronted with such material in nature. Those grotesque trees, with long naked stems, repeated in the long dark lines of shadow across, are indeed difficult to deal with, but once right, how effective, and what character there is in them!

The conventional method would have been to get the sheep in the centre of the roadway, but there is evident intention in the position of the sheep, as they are forming a straight diminishing line, converging with the avenue of trees and roadway. There is, too, consummate art in the management of the clouds. How rare and how difficult are clouds opposite to the light; it is in the presence of such cloud effects as these that one begins to feel the vulgarity of the sunsets and sunrises brilliant and effective.

I heard it said the other day that the cheapest thing in photography is a mild sunset, and next—well, never mind what, only it was something about medals of a certain society. But certainly there is just now a redundance of "misty evenings" and "declining days" amongst photographers of lesser power, and such clouds as Mr. Craig Annan has so admirably secured are a real lesson and a delightful relief. "Fishers' Wives," too, is a picture in every sense of the word; note how the standing figure breaks the horizontal line of the breaking sea, the kneeling figures centrally placed, and yet without any appearance of construction or artificial arrangement in the composition. The boat suggests distance, and is yet clear and strong. The richness and purity of the carbon brown is no trifling factor in the success of the whole series.

Next to these are the series of figure subjects by Mr. Ralph W. Robinson. Of these, probably "Going to Pasture" will be most popular—the startled cow is a fine piece of work, and were it not the work of the camera, would be called magnificent drawing; anyway it was secured at just the proper moment, and the animal is full of life and action, as photographed cows too rarely are. More poetic and, at least, more subtle in idea, is "Gossips;" the composition is of the simplest, and an artist of less ability would probably have attempted to put these figures of ancient dames in a more studied attitude, and would have been certain to have shown both faces—but the nearest figure is quite unconscious of the photographer, and is as natural as is the whole composition. There is a good deal more of the same worker's excellent and, in the present mood, instructive pictures, and if there were three or four instead of ten pictures from the same hand, they would, probably, have greater weight, yet it would have been difficult to decide which to exclude.

In this same section we have several pictures by Bernard Alfieri, and those who know his previous work will remark the rapid and marked improvement not so much in execution but in conception and ideas.

Most of us have known him as the writer of a photographer-tourist handbook, and the skilled portraitist of places one has visited or would like to, and in all was clearly visible a passionate love of nature, and now the ultimate outcome was worth the waiting. "The Derelict" is one of the pictures at the Dudley to go and see. To show how impressive is the effect of the all but obscured sun as the great cloud mass, awesome and weird, is creeping high into the heavens and enveloping the cold waters of the river shallows in gloom and mist, one quite forgets the title and its origin. Truly there is, when one comes to think of it, an old decaying hulk, but the picture speaks for itself of greater things than the fragments of a disused smack.

There is considerable feeling, too, in the group of Silver Birches, which is just one of those subjects demanding a large size. In a small size it would probably be nothing more than pretty and delicate, and the faint suggestion of light clouds in the distance is a useful comparison to the overdoing of clouds which has of late been rather prevalent. Mr. Bernard Alfieri furnishes food for thought and a source of pleasure in the very strong effect entitled "Rain." Carry this picture in your mind, and remember it at an hour of cold, rainy weather by the sea, and you will appreciate its qualities better than whilst comfortably disporting yourself in a West-end picture gallery. These and similar effects are found by going out and dwelling amongst the rivers and shores, and observing often the clouds and atmosphere. And again in No. 130 Mr. Alfieri gives us suggestion of the movement of wind amongst the rushes and trees, and a feeling of desolation reigns over the mere in "A Winter Landscape." These will strike anyone who has seen nature under these conditions as not reflections, but interpretations. But we are half round the gallery, and time is up. Enough subject for reflection for the present, and if permitted I will complete my task later, so out into the London streets homeward, filled with thoughts of country scenes in the declining autumn, a season so dear to picture-makers' resolutions, ideas, and hopes for future work, and perhaps disconsolate over past failures—a little doubtful perchance as to the possibilities of photography after all and of one's own capabilities.

(*To be continued.*)

Baden-Baden. — Herren Schreck, of the Central Drogerie, 19, Langestrasse, Baden-Baden, has fitted up an excellent dark-room for the use of customers.

The Infallible Exposure Meter Co., Wrexham, requests us to state that they are preparing a new edition of their book of instructions, and would be glad to receive two or three plates of each of the different kinds manufactured, to test the present speeds for their revised list of speed numbers. They will be pleased to pay for cost and postage.

On the Arun.—The best adventures, as someone says, are not those you seek; and though romance is not to be expected, perhaps a careless stroll along the Arun may bring you sights which will live kindly in the memory, long after more exciting recollections have ceased to please. You may come across some botanist with a tin like a huge sandwich box, peering here and there in anxious search for some rare plant, and then in pleasant contrast some party of girls, careless indeed of botany, but with their hair and hats stuck with buttercups and daisies, and their laps full to overflowing with loosestrife and meadowsweet. It will be strange if you do not happen to see one or more anglers watching with Memnonic patience the tip of his float, or their floats, or (bitter fortune) some less alert Waltonian fast asleep on his back, while the one fish of the day is tugging at his line. It will be almost stranger still if you meet not an artist, for it is the land of artists. It may be some old-fashioned gentleman with spectacles on nose, drawing with photographic accuracy the convolutions of a dock leaf; or perhaps a ruddy youth fresh from France, with a huge box of pastel by his side, smearing in a red cow against a field of uncompromising greenness which rises up behind the animal like a wall; or you may see another, happily settled by his little easel, trying to finish in the evening a sketch that he has been more or less employed at the whole day. It is true that when he began the sky was grey, and now it is blue, that the light was on his right hand, and now it is on his left; but what does that matter? it will all have been done in the open air. Or you may come across a really fine sketcher, noting with rapid touches the true relations of sky and red roof, of yew tree and poplar, of grass and rushes, and then when you think he has but begun, putting all up, for he has finished; or yet again another sketching some detail in black and white for an article such as this, some bit of blackthorn, or clump of thistles, or one of those curious double gates which in this part are used to baffle the wandering propensities of cattle.—*From the Art Journal for October.*

Splashes of Ink.

By Penfeather.

It may not be generally known that the Patent Office library contains a good collection of books on photography. Most of the standard works are to be found there, as well as sets of the photographic periodicals and annuals. The Patent Office is in Southampton Buildings, Chancery Lane, and the library is open free to the public from 10 a.m. until 10 p.m. daily. Contrary to what one might expect of a department under Government control, there is a noticeable absence of red tapeism about the regulations. The only formality to be gone through to become a reader is to sign one's name in a book on entering, and that being done, the books can be used as freely as those on one's own book-shelves. In addition to the books, the current number of most of the British scientific and trade periodicals is to be found, and many foreign ones.

There has been lately a tendency on the part of some who evidently wish themselves to be considered "superior persons," to disparage the value of technical knowledge on the part of those who use photography as a means of artistic expression, and, strange to say, these very individuals are those who employ the most artifice in the production of their works. To say that a work can be artistically perfect and yet not technically perfect is to ascribe its merit to an accident. Technical excellence has nothing to do with sharpness or fuzziness, although technical excellence and perfect definition are now sometimes used as though they were synonymous terms; but want of technical perfection may be detected much more easily in a sharp picture than in a fuzzy one. Brightness and definition are not incompatible with feeling, and sentiment is not confined to scenes of murky obscurity. We shall understand these matters better in time, and shall be able to laugh at the little extravagances that are being indulged in by those who are now setting themselves up as our teachers, and they will join in the laugh. We have been accustomed to portray nature in the unimaginative style of the architect's drawing, in a manner prosaic rather than untruthful. The tendency now is to rush to the other extreme, and, in the desire to avoid the errors of the past, to assume that art is impossible without mystery. I do not wish it to be supposed that in penning these lines I have any wish to deride the honest endeavours of those who are striving through their work to obtain for photography the recognition it deserves, as a means of artistic expression. The fledgling is not a contemptible object, although its first efforts at flight may be as amusing as they are unsuccessful.

I must confess that I have very little love for the Photographic Society of Great Britain. The professed object of its existence is the advancement of photography, but the methods by which it has attempted to carry out that object have been peculiar in the extreme. If it has a redeeming feature, it is its annual exhibition, and this, though its shortcomings have been many, has managed, hitherto, to maintain its position as the most important photographic exhibition of the year. This supremacy has, however, now been challenged, and a rival show has been instituted under the title of the "Photographic Salon," which owes its origin to the exertions of a few individuals who, notoriously, owe the Society a grudge and who have certainly chosen a means of paying it which promises to be successful and at the same time cheap as far as their own pockets are concerned. It needs hardly to be said that any hostility to the Society has been most carefully concealed, and the conduct of the wolf in the fable, or rather wolves generally in fable, has formed the model for imitation. It will be remembered that whenever the wolf met a sheep who happened to be on the other side of the stream or at the window of a house, or anywhere beyond convenient eating distance, he was at great pains to impress on his intended victim that it was quite a mistake to suppose that wolves were the enemies of sheep but that in reality they were their best friends.

The original promoters of the Salon have played the wolf trick with admirable skill, and are probably enjoying a laugh at the completeness of their success, having actually succeeded in obtaining the assistance of several members of the society, including two members of its council, in carrying out their scheme of revenge. This complication is likely to lead to a pretty little ruction when the members of the Photographic Society of Great Britain have an opportunity of discussing the state of affairs, and, truly, it is rather difficult to imagine a more ridiculous position than that in which Messrs. Gale and Hollyer have placed themselves, and they will have to display much cleverness and tact to extricate themselves from it without damage. The acceptance of office in the P. S. G. B., or in any other society, constitutes in itself a pledge that he who occupies it will devote his energies to furthering the interests of that society. These gentlemen have allowed their names to be advertised as supporting an enterprise which, to put it in the mildest possible form, is competing against the society. They can hardly admit that they have knowingly acted against the interests they have undertaken to protect, for that would be to declare themselves wolves, and the only alternative seems to be to plead that they were unaware that the interests of the two organisations were conflicting, and that would be to confess themselves—well, let us say as simple as the sheep in the fable who mistakes the wolf in sheepskin for one of his own brethren.

Wet Collodion for Beginners.

By Charles W. Gamble.

I.

It is the writer's object in this series of articles to give to the best of his ability concise directions for the practical manipulation of certain branches of wet collodion work. For convenience it is assumed that the reader has no knowledge whatever of this particular sphere of photographic technique, as by doing so one may avoid omitting any detail necessary for his guidance which might appear, to those even slightly conversant with the subject, somewhat superfluous. Let us then first consider the operations by which a wet collodion negative is produced. We take a plate of glass, of the requisite size. This is cleaned with great care, every trace of foreign matter being removed. The plate is now coated with iodised collodion. The collodion is poured over the plate, and we obtain a film which, when the solvents have sufficiently evaporated, "sets" and forms a coating to the glass. Directly the film has properly "set" the plate is immersed in a solution of silver nitrate, and after the expiration of sufficient time, the plate is slowly withdrawn and carefully drained. It is now exposed to an image in the camera, and after exposure is at once "developed," To "develop" the exposed plate, it is held in the hand either by a pneumatic holder or upon the finger tips, the coated side being up; and a solution of ferrous sulphate (iron proto-sulphate), acetic acid, and water is poured over the surface. The image quickly appears, and when "development" is completed the film is quickly washed under a gentle stream of water, and the plate is now placed in a solution of potassium cyanide. When it has remained sufficiently long it is removed and at once well washed. If not dense enough, it is now intensified, again washed, dried, and afterwards coated with varnish. When the coating of varnish is sufficiently hard, the negative is ready for "proofing."

Let us now trace what happens during the series of operations described. We have first a clean glass plate which has been coated with "iodised" collodion. Collodion is a solution of pyroxylene in a mixture of ether and alcohol. Iodised collodion is collodion containing a metallic iodide—a combination of iodine and a metal—and some free or uncombined iodine As an example of metallic iodide we may take the compound cadmium iodide. After the plate has been coated, we have therefore a film of collodion containing cadminm iodide plus a small quantity of free iodine. On placing this plate in the solution of silver nitrate, what is known as double decomposition occurs between the cadmium iodide and the silver nitrate. The iodine which was in combination with the cadmium combines with the silver to form silver iodide, and the nitric acid which was combined with the silver unites with the cadmium to form cadmium nitrate,—

Cadmium iodide + silver nitrate = cadmium nitrate + silver iodide.

The free iodine combines with another portion of the silver nitrate, forming more silver iodide (and iodate) and nitric acid is set free,—

Silver nitrate + iodine = silver iodide + silver iodate + nitric acid.

The iodide of silver remains suspended in the film in the form of minute particles. The nitrate of cadmium being easily soluble, is nearly all washed out of the film into the "bath," viz., the silver nitrate solution.

We have now a plate coated with a film of collodion, containing in suspension minute particles of silver iodide, moistened with a solution of silver nitrate.

On exposure in the camera the change which takes place is assumed to be as follows:—A portion of the iodine contained in the silver iodide is set free, and there is formed what is termed a "sub-iodide," a compound which contains less iodine to a given quantity of silver than the silver iodide,—

Silver iodide = silver sub-iodide + iodine.

In order that this change may take place, it is necessary that there be present some substance which will combine with the liberated iodine. We have such a substance in the nitrate of silver present in the film. When the iodine is set free it combines with the silver

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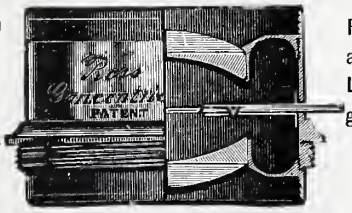
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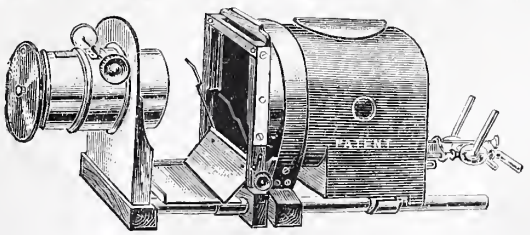
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in the silver nitrate. The reaction which takes place has been mentioned before, in connection with the free iodine present in the collodion at the moment of immersion in the silver nitrate solution.

If the plate after sensitising was washed, so as to get rid of the free silver nitrate, it would be found that the film was practically insensitive. If a plate, however, which has been so treated be flooded with a solution of same substance, which is capable, like the silver nitrate, of absorbing iodine, then the film would be again sensitive to light. Snch substances as albumen, tannin, gelatine, etc., act in this way. These bodies form compounds with the liberated iodine,—they act as iodine absorbents. In order, therefore, that light may produce a change in silver iodide, some body must be present which is capable of absorbing iodine. This law was first laid down by Dr. Vogel, who termed the absorbing substance a "sensitiser." The term "preservative" is often used to indicate the same thing. Instead of using a metallic iodide we might use a metallic bromide or a mixture of the two salts in our collodion. With the bromide we should get bromide of silver, and with the two salts, bromide and iodide of silver.

In the case of a film of bromide of silver, it will be found that it is still sensitive when the silver nitrate is washed away, possibly because the moisture present absorbs the bromine set free. If the plate after washing be treated with a "sensitiser" (which will absorb bromine), the sensitiveness of the film to light will be increased. It will be seen that there is a difference between a film containing silver iodide and one containing silver bromide, in that the latter is sensitive to light in the absence of a special sensitiser, while the former is not.

Returning now to our exposed plate, we next consider the question of "development." It has been explained that the film is treated with a solution of protosulphate of iron and acetic acid in water. Upon flowing this solution on our film the image is "developed"—the effect of the exposure is rendered visible.

Let us see what explanation can be found for this phenomenon. Proto-sulphate of iron acts in certain cases as a reducing agent. If we add a small quantity of this substance to a solution of silver nitrate it will be seen that a darkening of the mixture quickly takes place, this darkening being caused by the presence of small particles of metallic silver due to the reduction of the silver nitrate.

This reduction varies in rapidity according to the different conditions (temperature, strength of solutions, etc.) under which the two substances are brought together. Certain bodies if present will retard the decomposition or reduction. Many acids act in this way. If acetic acid be present it will retard reduction. Any substance (inert otherwise) which makes the solution more viscous, as gelatine, glycerine, sugar, retards the precipitation of metallic silver. In this case the actual reduction may take place as rapidly, but the particles of silver being extremely small take longer time to travel in the viscous than in a more mobile solution, so that the time taken to deposit a given amount of the metal is increased. If we applied to the exposed film—which is wet with a solution of silver nitrate—a plain solution of iron proto-sulphate, reduction would take place extremely quickly, and the whole film would be covered with a veil of the deposited metal. If, however, precipitation is caused to take place more slowly, then it is found that the metal is deposited only on those portions which have been acted upon by light, and that where the action of the light has been most powerful there the greatest deposit is formed; and where it has been least powerful the smallest deposit. So that at the end of the action, which for want of a better term we call "development," we have a film holding *in situ* varying amounts of metallic silver representing (more or less correctly) the various gradations of the light which originally acted upon the silver haloid* when the film was exposed in the camera. This constitutes our negative image. Let us, however, endeavour to ascertain why the phenomenon described as above takes place. Why do we get an image in metallic silver? We must remember that, to begin with, we had a film containing a silver haloid—silver iodide—that the film was exposed in the camera to an image, and the effect of the exposure was to cause the formation of varying amounts of "sub-haloid" or sub-iodide, according to the intensities of light acting on various parts. So that after exposure we have a "latent image" of the object in silver "sub-iodide." The "sub-iodide" mentioned has an affinity for freshly precipitated metallic silver. Upon pouring over the film an acidified solution of iron proto-sulphate, the precipitated silver particles (reduced from the "bath" solution adhering to the film) are attracted to the particles of "sub-iodide" and the greater the amount of sub-iodide in any part of the film, the greater will be the amount of silver attracted to and deposited upon that particular part. So much for the initial action. According to the law of crystalline attraction, every newly-formed minute crystal attracts another of a like nature, so that the crystals in the image already formed will attract more silver, and thus the image will be built up and so increase in density. The silver forming the image comes solely from the silver solution adhering to the film, and when the whole of this silver is precipitated the increase in the image deposit stops—in ordinary parlance, "development" ceases. Increase in density can, however, be obtained by the further addition of nitrate of silver solution, assuming that at the time of the addition the reducing agent—the proto-sulphate of iron—is not exhausted.

When an increase in density is required the operation is generally a separate one, termed "intensification." Why is it, however, that when we apply a plain solution of protosulphate of iron, we get a veil all over the film instead of an image? The reason is that the silver is deposited too quickly, and the attraction of the sub-iodide is not great enough to draw to itself this very rapidly depositing silver, and instead of the metal forming an image it forms a loose deposit or veil over the surface of the film.

After development the plate is washed and then treated with a solution of potassium cyanide. This combines with the silver salt to form a compound (double cyanide of silver and potassium) which is soluble in the excess of potassium cyanide present, and on washing afterwards in water the whole of the cyanides are removed. If the negative is of sufficient density it may then be dried. If, however, greater density is required the negative can be "intensified."

It is important to the student to note that the whole of the silver iodide and "sub-iodide" are removed from the film by the application of potassium cyanide and water. In the gelatine dry plate those portions of the silver compound which have been acted upon by light are reduced by the developer, the reduction product forming part of the image; but in a collodion wet plate, as described, this is not so. The altered silver salt, as before stated, merely attracts the metallic silver reduced from the adherent "bath" solution by the developer, determining the position of the first deposit, as before stated. After drying, before the negative can be printed from, it must be varnished. The collodion film, unlike gelatine, is so exceedingly tender and adheres with such slight tenacity to glass that it would without some protection be readily scratched and otherwise damaged.

In the next article the apparatus and materials required for commencing practical work will be described.

* The elements chlorine, bromine, and iodine are termed *halogens*, and their metallic compounds *haloids* or *haloid salts*. Thus silver iodide is a silver haloid. The term *alkaline* haloid is used when the metal in combination belongs to the "alkaline" group. Thus potassium iodide is frequently referred to as *alkaline haloid*.*

Midland Camera Club.

THE annual exhibition of the Midland Camera Club was held in the pavilion at the Moseley Botanical Gardens. It was opened by Sir Benjamin Stone, and the works will be on view until the 14th inst. The club is to be congratulated both upon the number and the merit of the works shown, and it is to be hoped that the exhibition will be continued in future years. There are no fewer than 140 pictures, which have been treated in almost every process known to the photographer, and a Prince of India and several Americans are amongst the exhibitors. A feature of the display is the architectural photography, in which Mr. S. G. Mason, of Moseley, takes the premier award with a charming view of "Vicar's Close, Wells." Some fine specimens of instantaneous photography are also on view, whilst the collection of figure studies is quite exceptional, and in this department Mr. Hall-Edwards, the president of the club, has scarcely any competitor. The transparencies sent in by Mr. S. G. Mason, but not for competition, are magnificent specimens, and the animal studies are of considerable merit. There are a number of views taken in the Moseley Botanical Gardens, which deserve special commendation, and a special collection of photographic apparatus. The following is the prize list:—Class I.—Instantaneous (open only to members): Silver medal, Charles S. Baynton; bronze medal, Walter D. Welford; certificate, S. G. Mason. Class II.—Landscape (open to members only): Silver medal, Charles S. Baynton; bronze medal, Sam. G. Mason; certificate, T. J. Perry. Class III.—Architecture (to members only): Silver medal, Sam. G Mason; bronze medal, A. H. Slade; certificate, Hall-Edwards. Class IV.—Home portraiture and groups (to members only): Silver medal, Hall-Edwards; bronze medal, Sam. G. Mason; certificate, A. H. Slade. Class V.—Figure studies (to members only): Silver medal, Hall-Edwards; bronze medal, T. J. Perry; certificate, H. R. Leech. Class VI.—Transparencies (to members only): No competition; only one exhibitor. Class VII.—Lantern slides, sets of six (to members only): Silver medal, H. R. Leech; bronze medal, C. Jevons Fowler; certificate, Hall-Edwards. Class VIII.—Stereoscopic (to members only): No competition; only one exhibitor. Class IX.—Animal studies, sets of three: Silver medal, W. D. Welford; bronze medal, Hall-Edwards; certificate, C. Jevons Fowler. Class X.—Enlargements (to members only): Silver medal, C. S. Baynton; bronze medal, Hall-Edwards; certificate, C. Jevons Fowler. Class XI.—Best collection (to members only): Silver medal, Hall-Edwards;

bronze medal, S. G. Mason; certificate, C. S. Baynton. Class XII.—Portraiture direct (open only to professionals): No competition. Class XIII.—Enlargements (to professionals only): No competition. Class XIV.—Hand-camera work (open to all amateurs): Silver medal, Victor Alexander; bronze medal, W. D. Welford. Class XV.—Landscape (open to all amateurs): Silver medal, Prince Shamarandra C. del Barmu, of Ancient Tipperal, India); bronze medal, C. Cole; certificate, Martin J. Harding. Class XVI.—Figure studies (open to all amateurs): Silver medal, Clarence B. Moore, Philadelphia; bronze medal, Prince Shamarandra; certificates, Hall-Edwards. Class XVII.—Lantern slides, sets of six (to all amateurs): Silver medal, E. Dockree; bronze medal, Algernon Brooker; certificate, Hall-Edwards. Class XVIII.—Scientific, sets of six: Bronze medal, Frederick Iles; certificate, E. Dockree. Class XIX.—Best picture taken in Moseley Botanical Gardens (open to all amateurs): Bronze medal, C. Jevons Fowler; certificate, Sam. G. Mason. Class XX.—Greatest novelty in apparatus (open to manufacturers): Not yet judged. Classes XXI., XXII., and XXIII.—For pictures taken upon Sandell plates: No competition; only one competitor.

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Exposure

Development

RECORD OF EXPOSURES, ETC., FOR PRINTING:—

	Paper or Plate used	Illum'nt	Dist'nce from Ill	Exposure given Min.	Exposure given Sec.	Development or Remarks.
CONTACT—						
Bromide Print						
Alpha Print..						
Lantern Slide						
Do. do.						
REDUCTION—						
Lantern Slide						
Do. do.						
ENLARGEMENT—						
Size						
Do.						
Do.						

	Date of Exp.	Light	Frame. Put out	Frame. Taken in	Total Time Ex.	Sensitometer No.	Development or Remarks.
PLATINOTYPE ..							

We have tested the paper, both of the envelopes and preservative paper, and found it harmless, and they will form useful adjuncts to the dark room.

THE "ROCKET" PLATES.

Elliott and Son, of Barnet, the well-known manufacturers of the Barnet plate, have sent us samples of the above new plate which they have placed on the market.

In our hands they have proved to be of maximum rapidity, and we are informed that special precautions are taken to ensure a uniform speed. The emulsion is exceptionally clean working, and, to use a forcible but expressive term, it may be punched or forced in development, without giving fog or stain. As far as our trials



have gone, the plate yields good results and very soft and fine-grained negatives with any of the usual developers, but the makers specially recommend a pyro-soda developer.

For snap-shot work, negatives for lantern-slides, and enlarging, as well as ordinary work during the coming winter months, with their attendant bad light, these plates will be of great service.



The accompanying illustrations are samples of work done on these plates at 3 p.m. in the middle of September, and in which it should be noticed that the horses are travelling at right angles to the line of sight.

Societies' Notes.

WE have received the annual report of the Richmond Camera Club, which shows the society to be in a strong and flourishing condition.

THE annual report of the West London Photographic Society is also to hand, and the accounts are in a very flourishing state.

THE first weekly meeting of the Central Photographic Club was held at Coleman's Hotel on 6th inst., when the AMATEUR PHOTOGRAPHER Prize Slides were shown. On the 13th inst a smoking concert will be held, with Mr. Traill Taylor in the chair. On the 20th inst. a members' open night will be held.

LEYTONSTONE CAMERA CLUB.—The following are the conditions, etc., of the second annual exhibition and competition, which will be held at the Masonic Hall, High Road, Leytonstone, from November 20th to 25th. Judges, F. P. Cembrano, jun., Colonel J. Gale, and Andrew Pringle. Open Classes.—F, Special champion class (for pictures that have already received awards), in which a gold, silver, and bronze medal are offered; G, prints of all kinds by any process; H, lantern slides (set of six). The judges have eight medals (four

silver, four bronze) placed at their disposal in these two classes. Apparatus.—A silver medal will be given for the most useful novelty in apparatus sent in for exhibition. There will be no entry fee in this class, but exhibitors will be expected to advertise in the official catalogue. Extra entry forms and all further information can be obtained from Albert E. Bailey, Hon. Secretary, Rose Bank, South-West Road, Leytonstone. *Rules and Regulations.*—1. The classes are open to all; no distinction being made between amateur and professional. 2. The decision of the judges shall be final. 3. The awards are placed in the hands of the judges, and they have full power to withhold any of them. 4. Exhibits which have prior to November 7th, 1893, taken awards at competitions or exhibitions are only eligible to compete in Class F. 5. All work except framing must be done by exhibitor, except professional portraiture. No competitor can take two prizes of the same value, and any one picture cannot take an award in more than one class. 6. All photographs must be mounted and framed, Oxford or oval frames not being admitted. 7. Entry forms must be correctly filled up and sent to the Secretary, Mr. Albert E. Bailey, Rose Bank, South-West Road, Leytonstone, accompanied by a remittance for entrance fee, on or before November 7th. 8. The Committee reserve the right to refuse and return any exhibit without assigning any reason for so doing. 9. Exhibitors offering their pictures for sale are requested to fill in the price on the entry form, a copy of which will be kept by the Secretary, and 10 per cent. commission deducted from all sales effected during the exhibition. 10. Exhibits should bear no title or description on the front (but name and address should be legibly written on the back), as they will be numbered and described in the official catalogue, a copy of which will be sent post free to all exhibitors with the award list. 11. Exhibits will not be allowed to be removed during the exhibition. 12. The Committee reserve the right to exhibit (not for competition) any exhibits entered in the wrong class or infringing any rule or regulation; and the entrance fee in such case will not be returned. 13. The exhibits must be delivered, carriage paid, at the Club's head-quarters, The Assembly Rooms, High Road, Leytonstone, on the 14th of November, except those coming from the Pall Mall and Dudley Galleries, which will be received up to November 16th, addressed to the Hon. Secretary. Each package bearing outside the name and address of the sender. 14. The exhibits will be unpacked, re-packed, and delivered to carriers at the close of the exhibition, carriage forward, at owner's risk; those sent per post should have the return postage paid when entrance fee is sent, if they are desired to be returned by post. By engaging an experienced packer, the committee will take every precaution, but they will not hold themselves responsible for any accident, loss or damage that may occur. The exhibits will be insured against fire during exhibition. 15. The committee will be pleased to receive pictures not for competition, on which no entrance fee will be payable. 16. In Classes A, B, C, and D, one shilling per class for each three frames; in Classes E, G, and H, one shilling for each frame or set of slides; and in Class F, two shillings and sixpence per frame. 17. The successful slides will be put through the lantern each evening. 18. The centre of the large hall will be devoted to the display of photographic apparatus.

Mr. H. E. TREW, Hon. Sec. of the Light and Truth Postal Photograph Club, has removed to Boscombe Park Pharmacy, Pokesdown, Bournemouth.

THE judges at the South London Photographic Society's exhibition will be Mr. F. P. Cembrano, jun., Mr. W. E. Debenham, and Mr. Leon Warnerke.

Societies' Meetings.

Accrington.—On October 2nd the 1893 Competition Photographs, numbering eighty-one, were exhibited. The prints were divided into four classes, and these had been adjudicated on by a few gentlemen connected with the Burnley Photographic Society, the prizes being awarded as follows:—Class I., landscape, etc., Mr. J. A. Hanson, 1st; Mr. Jos. Barnes, 2nd. Class II, portraiture, Mr. Jos. Barnes, 1st; Mr. A. Greenwood, 2nd. In this class Mr. Barnes obtained the highest number of marks for two pictures, but as the rules only allowed him one prize, the second prize fell to the third picture. Class III., photographs taken at club outings, Mr. Jos. Barnes, 1st; Mr. W. Rawson, 2nd. Class IV., hand-camera pictures, Mr. W. Rawson, 1st; Mr. J. Hanson, 2nd. Medals were also awarded to the following gentlemen for the highest aggregate number of marks obtained in the first three classes:—Gold medal, Mr. Jos. Barnes, 184 marks; silver medal, Mr. J. A. Hanson, 130 marks; and bronze medal, Mr. A. Greenwood, 124 marks. On the whole the prints exhibited were fairly good, particularly in Class III., though the work of Mr. Barnes was far superior to any other competitor's. In addition to the above, several fine enlargements were exhibited by the President (Dr. Clayton) and Mr. Jos. Barnes, also the AMATEUR PHOTOGRAPHER 1893 Prize Photographs were specially procured for exhibition on this occasion, and were very much admired. On Thursday evening Mr. Smith, of London, demonstrated before a large audience on the "Eastman Company's Printing Processes." His remarks were mainly confined to the Solio and Nikko papers, and were very instructive and interesting, his humorous touches being much appreciated. Several prints on Solio paper were toned successfully in the combined toning and fixing bath, and the separate baths, and the results obtained, particularly with the combined bath, fairly pleased the audience. Some very fine specimen prints on the various Eastman papers were handed round amongst the members for inspection, and at the close of the lecture numerous questions were put and answered by Mr. Smith to the perfect satisfaction of the audience.

Aston (Nat. Hist.).—The meeting on 5th took partly the form of a social and partly that of a lantern night. The most interesting portion of the latter was the reports as to the working of the Norris collodion lantern plate, which were distributed at a previous meeting. The brilliant capabilities of the said slides were fully realised by some splendid contacts from negatives of Kenilworth Castle, by Mr. Geo. Priddin. Miss Flamank and her brother, also Messrs. Rallings, Johnson, and Clark showed very successful views. The Secretary then drew attention to three slides from a negative of the Swallow Falls, and thereby showed the degree of detail and depth of intensity obtainable by varying exposure and development of the plates in question. Some minor difficulties were brought up, and at the earnest request of members, Dr. Hill Morris was prevailed upon to give a practical demonstration of working the new plates on November 2nd.

Ashton.—On October 4th and 5th Dr. Hamilton, Messrs. Thomas Glazebrook, Samuel Woolley, and Robert T. Marsland gave an exhibition of stereoscopic views. Dr. Hamilton's contribution depicted views taken in Norway, Switzerland, and places visited by the society during the summer, Mr. Glazebrook's were from the Isle of Man, North Wales, etc., including one or two very fine cattle studies. Mr. Woolley's views were mostly taken on the society's rambles, and as they were taken by his (own made) hand-camera many of them were a source of much amusement. One of the views (taken on the Marple ramble when at tea on the lawn at Mr. Joel Wainwright's), was very good. It was one of the society's V. P.'s taking his last cup of tea, sitting on the grass with an empty plate beside him, with a number of friends smiling around him. Another view was one taken on the Liverpool outing. It was at the time of the Liverpool Assizes, and was taken from the top of the St. George's Hall steps as the judge was leaving his carriage and coming up the steps. Mr. Marsland's views were nearly all taken on the River Dove between Mill Dale and Hartington, with a few on the River Manifold. A large number of members and friends visited the rooms of the society, and were very much pleased with the exhibition.

Birkenhead.—The monthly meeting was held on the 3rd inst., Dr. W. H. Hunt in the chair. The result of the annual outdoor competition was announced as follows:—Silver medal, Mr. W. H. Davies (a new member); bronze medal, Mr. W. T. Briggs. The business of the evening was an excellent lecture by Mr. A. W. Beer (an ex-president of the society) entitled "A Glimpse of Brittany and the Bretons," which proved a most enjoyable and instructive entertainment. Mr. Beer's slides are almost all reductions from 10 by 8 negatives, and are consequently very perfect in their detail. His subjects are principally architectural, and he devotes about thirty slides to Mont. St. Michel alone. The society's ordinary meetings will be held on the first Tuesday in each month in future.

Birmingham.—Ordinary meeting on 3rd inst., Mr. J. T. Mousley in the chair. Mr. Smith, of the Platinotype Company, gave a practical demonstration of the working of the process in all its branches. Mr. Smith developed prints on the hot-bath, cold-bath, and for sepia tones, which latter were especially admired. Prints made on various textile fabrics were also developed, and some marvellously beautiful finished results were shown; all present agreeing that this was a remarkable application of the process. Mr. Smith also showed the working of the special printing lamp; a proof being ready for development in ten seconds. The lecturer having kindly answered numerous questions, a hearty vote of thanks was accorded to him and to his firm.

Brixton and Clapham.—Meeting on the 3rd inst., the chair being taken by Dr. J. Reynolds, F.R.G.S., President. Four new members were elected. At the conclusion of the ordinary business Mr. E. Dockree read a paper upon "Gelatino chloride Papers." He traced the history, and explained the composition, use, advantages, and

disadvantages of these papers. Several methods of toning were explained, and numerous hints as regards printing, toning, and general manipulation of the papers were given. His remarks were illustrated by numerous examples. He has, after a series of experiments, succeeded in obtaining a toning formula for producing results almost identical with platinum prints as regards appearance, and it was difficult to distinguish, in the specimens which he produced, which were platinotypes and which were chloride prints toned with his bath. Numerous examples of failures were also shown. Later in the evening the club decided to purchase an enlarging camera, and it is expected that sufficient funds will be forthcoming to enable the club to purchase the apparatus at an early date.

Croydon (Camera Club).—October 4th, the President gave an address on "Photographic Novelties," to a large gathering. Considerable discussion ensued. Mr. G. Carden showed a fine series of about forty whole-plate views of old Croydon. A portrait of H. E. Neeves (a deceased member) was presented to the club by Messrs. Sladden and Isaac. Messrs. Bowen, Miles, and Burrough were elected members.

Ealing.—The annual meeting was held on the 5th inst. The annual report showed that the society was in a flourishing condition. There had been a net increase of eleven members during the year, bringing up the total membership to fifty-one. A spacious dark-room had been obtained and furnished with the necessary sinks, dishes, glasses, and chemicals. The room was available to members free at any time. Several lockers had also been provided, for which a charge of five shillings per annum was made. A number of valuable papers and demonstrations had been given throughout the winter months, and the summer outings had been fairly well attended. The officers and council for the ensuing year were elected as follows:—President, Mr. H. W. Peal; Vice-Presidents, Messrs. C. Jones, W. T. White, T. Simpson, and H. C. Draper; Hon. Treasurer, Mr. A. F. Taylor; Hon. Secretary, Mr. Murphy; Hon. Librarian and Custodian of the Dark Room, Mr. B. E. Peal; Council, Messrs. Belt, Whiting, Wakefield, and Gregory, and Drs. Phillpotts and Gibbons. It was decided to at once take steps to fit up an enlarging apparatus in the dark-room capable of taking negatives from whole-plate downwards and of enlarging up to 24 by 18 in. It would eventually be supplied with the electric light. It was also decided to circulate some portfolios of prints amongst the members for mutual criticism. It was announced that at the next fortnightly meeting Mr. S. H. Fry would give a demonstration of the Paget printing and processes.

Hackney.—Ordinary meeting on 3rd inst., Mr. R. Beckett in the chair. Members' work was shown by Messrs. Barnes, Hudson, and Puttock. The following questions were read: What exposure was necessary for printing in clouds on a landscape plate, nominal exposure for a negative being forty seconds? Presuming the density of the negative to be the same as that which is to be printed from, it would require about fifteen to twenty seconds' exposure. Mr. S. J. Beckett used the cover-glass to put the clouds upon. Mr. Fenton Jones used a printing frame, shading portion upon which the landscape would come with a book. A similar question was asked as above for printing in clouds on bromide paper; the exposure would be about a quarter to half of what the negative would require. Mr. S. J. Beckett asked the best way to remove Amidol stain from lantern-slide? Several members stated it could not be removed. As a trial, nitrite of soda was suggested. Mr. Grant asked the reason of black spots upon a negative developed with pyro and soda? Mr. Beckett stated it looked like an old plate. Mr. Smith asked whether any shorter exposure was required for bromide paper developed with Dresser's formula? Opinions seemed to be that it should be the same, only a weaker developer would take longer to obtain the same degree of density. With Amidol, according to the strength of developer, so you can make it a quick or slow developer, density being obtainable with either. Mr. E. J. Wall then proceeded with a very instructive paper upon lenses, and dealt very largely with the subject, giving the various kinds, their uses, manufacture, faults, etc., illustrated with designs in coloured chalks.

Herefordshire.—The annual general meeting was held on the 3rd inst., when a large number of members were present. Mr. T. Smith, A.C.A., was elected to the chair; T. Blake, Esq., J.P., was elected president; Messrs. A. Watkins, J. Parker, J. T. Salwey, and Rev. G. H. Morgan were elected vice-presidents. Four new members were admitted to the society. The Hon. Sec., Mr. Parker, read his report of the successful meetings and work of the members during the past season, also intimated his intention of resigning the Hon. Secretaryship on account of want of time, and proposed Mr. Cecil Gethen. Mr. E. J. Davies, in seconding, spoke in high terms of the good work the late Hon. Sec. had done for the society since its formation six years ago. The Hon. Treasurer, Mr. Haines, was re-elected, and his accounts were passed, leaving a satisfactory balance in hand. The fixture of dates for lantern-slide competitions was left to the Council meeting to decide. The Secretary also announced that the AMATEUR PHOTOGRAPHER Prize Slides had been kindly promised for February 1st, 1894.

Leeds.—Ordinary meeting 5th inst, Mr. Godfrey Bingley in the chair. After the ordinary business was concluded, Mr. Herbert Denison read a paper on "Photogravure." In a very lucid manner he described the whole process from negative to finished print. He passed round negatives, tissue, and copper plates, in the various stages of manipulation, and showed that this very beautiful and permanent process was within the reach of all. Mr. Bowncs, one of the members, who has taken up this process, also showed some very pretty pictures. Mr. Ramsden showed one produced thirty-five years ago. Conversation followed. Questions were asked as to probable cost and outlay, which were answered satisfactorily.

Richmond.—The first meeting of the winter session took place on the 2nd inst., when a display of lantern-slides was given by Mr. H. Little. If the opening night may be taken as an augury, the session should be a brilliant and successful one. The hall was well filled with members and their friends, including a goodly number of ladies, and the numerous slides shown included many of the finest examples of Mr. Little's well-known work. They comprised scenes in the Riviera, a series of magnificent architectural views of Rome, Florence, Venice, and Milan, and some miscellaneous English pictures of a variety of subjects, including racing yachts, horses jumping, big gun-firing (in which the projectile was distinctly visible as it neared the target), and others.

Sheffield.—The annual meeting was held on 3rd inst., Mr. B. J. Taylor in the chair. After the election of two new members the Treasurer presented his statement of accounts, which showed a very considerable balance in hand, and was considered satisfactory, and was duly passed. The Secretary gave a general report of the proceedings for the year, showing in detail the work which had been done each month. The excursions, although not numerous, had been well attended, and resulted in good work being done, especially the one to York. The society was never in a more flourishing condition, and the proceedings were characterised by an amiable tone throughout, each member being anxious to promote the general good of the society. The Secretary also announced several important fixtures for the ensuing year. The officers for the coming year were elected as follows:—President, Mr. Ernest Beck; Vice-Presidents, Messrs. B. J. Taylor Bradley Nowill, and Geo. Bromley; Council, Messrs. J. Smith, W. T. Furness, T. G. Hibbert, T. Firth, D. C. Brooks; Treasurer, Mr. W. M. Toplis; Secretary, Mr. Sparham Camp; Reporter, E. H. Pearce. After votes of thanks to the retiring officers, the members taking part in the exchange produced their pictures for division, and a most successful meeting terminated.

South London.—On 2nd inst., ordinary meeting, Mr. Maurice Howell (Vice-President) in the chair. At the conclusion of the formal business Mr. E. J. Lester gave an instructive and interesting address on "Outdoor Portraiture." In his opening remarks he stated that the beginner's instruction books always made a point of advising photographic novices to leave portraiture severely alone until they had mastered to some extent the art of taking views. However good this advice might be, it was in nine cases out of ten wholly ignored, and the beginner, as a rule, commenced his photographic career by attempting to get pictures of his admiring relatives and friends. The speaker would therefore endeavour to show how portraiture might be taken out of doors with results that very often could hardly be distinguished from studio work. The background was the first obstacle to be overcome when a large vignetted head was the desideratum. He found that a clean blanket stretched across a line and fastened with pegs acted as the best medium in this respect. He always selected the wall of the house from the other side of which the sun was shining, and then fixed his background at an angle. The person whose head was to be taken was seated (and this was most important, as in this class of work long exposure was necessary, and if the subject was made to stand the head would be almost certain to move), and a side face arranged for, the tip of the nose was focussed, and the exposure made with an ordinary plate (about 4 sec. in a fairly strong light) at f/11, which stop will be most useful. All darkness which would otherwise be noticeable under the chin and at one side of the face was thus got rid of, and a nice shade on one side of the face substituted, which gave the finished print the appearance of studio work. If the eyebrows of the sitter were very prominent, the face should be slightly raised, and the camera tilted on a parallel with it. Heliotrope was the best colour for ladies to be photographed in. If a sitter was fair, light clothes should be worn, but if dark-complexioned the operator should see that only black or very dark blue clothes were put on. With regard to developing, he was in favour of pyro-soda. As to a background for a group, he advised his hearers not to attempt to improvise one or it was almost certain to end in failure, and if they must have an artificial background they would have to get one made specially.

Tunbridge Wells.—The ordinary meeting was held on the 5th inst. The correspondence included a very nice letter from Mrs. Brampton, acknowledging the vote of condolence passed by the members at the last meeting, on the death of her son. A lecture was arranged to be given by Mr. S. Herbert Fry, but was unavoidably postponed, but by the kindness of the editor of the *Hand-Camera and Lantern Review* a set of prints which had been sent in for competition to that journal were despatched for the members' inspection; these proved exceptionally fine and gave much pleasure to the members.

Northern (Phot. Soc.)—Ordinary meeting, 5th inst., the President (Mr. Robins) in the chair. Professor McFadyen delivered a lecture entitled "Pathogenic Germs and Disease." The lecture was illustrated by lantern-slides taken from photographs and drawings by Mr. Coghill. These illustrated the hay bacillus, anthrax, glanders, tuberculosis, actina mycosis, and cholera. Some specimens were handed round for inspection, and some questions were afterwards asked, which the Professor courteously answered.

Messrs. Newman and Guardia have opened larger and more commodious offices, show-rooms, stores, and dark-rooms, where all their specialities in hand-cameras may be seen. Their factories still remain for the present in Farringdon Road.

SOCIETIES' FIXTURES.

Oct. 12—TOOTING CAMERA CLUB.—Members' Exhibition of Prints.
" 12—HARRINGAY AND FINSBURY PARK.—"Paget Printing-out Processes," S. H. Fry.
" 14—HUDDERSFIELD.—"Fungus Foray," Strathes Hall Wood.
" 14—LEYTONSTONE CAMERA CLUB.—Inauguration of the New Hall and Studio.
" 17—BRIXTON AND CLAPHAM.—"Diazotype Printing," Dr. Reynolds.
" 18—LEYTONSTONE CAMERA CLUB.—"Demonstration of the Simplicity of Dr. M. Anderson's Developing-fixing and Tone-fixing Cartridges," Mr. Eugene A. Leblanc. Chair taken at 8 o'clock.
" 18—NORTH MIDDLESEX.—"Cold-bath Platinotype with Glycerine Development," Mr. J. H. Avery.
" 18—DURHAM CITY CAMERA CLUB.—Lantern Entertainment, "Holiday in Holland," Dr. Stainthorpe.
" 18—CROYDON CAMERA CLUB.—Lantern Night—Exhibition of Matthew's Hand-lantern.
" 18—ASHTON-UNDER-LYNE.—Instructions will be given to beginners in Lantern-slide Making in the Dark-room by several Members.
" 21—LEYTONSTONE CAMERA CLUB.—Open Social Evening at Head-quarters, at 8 o'clock.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6164. **Toning Bath.**—Can any of your numerous readers give formula for toning bath to give a soft, silvery grey tone on gelatino-chloride paper? Also chloro-platinite of potassium bath, for same paper, Scholzig's enamel paper particularly?—JOHN S. FORSYTH.

6165. **Camera Adapter.**—Wanted, instructions for making an adapter to take whole-plates with a half-plate camera.—J. S.

QUERIES UNANSWERED.

Aug. 25.—Nos. 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.
" 22.—No. 6161.
" 29.—No. 6162.
Oct. 6.—No. 6163,

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOT.

R. E. H.—The black mark is due to a scratch on the film, the small pieces which detach themselves from the film are fragments due to chipping, whilst cutting to shape, getting in between the films, which, adhering to the gelatine, fall off in the developer and leave a blank space which prints black.

DARING.—(1) We think something could be made of this. The little white patches on the right attract the eye too much; we should just trim off half an inch and break the other patch up by stippling the film with a needle, and then print on mezzotype paper. (2) Hopeless, we're afraid. (4) Aylesford, of course, but the lines run down too much to the right-hand corner. What you want is to obtain a cloud with streaky cirrhus running in the opposite direction, and put the highest light behind the church tower.

W. MALLINSON.—We should think the prints are toned with gold and not likely to fade, and are also properly fixed. The best formula for a combined toning and fixing bath is—

Water	500 parts
Hypo	250 ,,
Ammonium sulphocyanide.. ..	25 ,,
Lead nitrate	10 ,,
Alum	20 ,,

Dissolve the hypo first, add the sulphocyanide, add the alum dissolved in as little water as possible, and also the lead nitrate in the same way; heat the whole to 50 deg. C. for ten minutes, allow to settle and filter, and before use add 7 to 8 parts of a 1 per cent. solution of chloride of gold to every 100 parts of this and 100 parts of water. Gelatine prints should be placed in this after a slight washing.

M. HONALSON.—The "Holidays with the Camera" prints need not be confined to one trip only. You can hardly say platinotype is not much used when about 30 per cent. of all the exhibits at Pall Mall are in this process.

SIGNALMAN.—The index to Vol. xvi. appeared Jan. 27th, 1893. We should certainly recommend the lens you name, and send the front to the makers and they will fit it on for you. We were not aware Jeffreys lived in Sussex, or might have dragged him in, but we were afraid we had dragged in too much extraneous matter already.

P. S.—Over-printed and flat; probably negative wants intensifying slightly; and why spoil a good thing by sticking in an incongruous figure? (2 and 3) Just a little too patchy, that is, the lights are a little too much scattered, or else it would be a fine thing. We prefer the tone of 2. (4) We fail to see why you took this—absolutely uninteresting. (5) This gives one the impression that the camera was not straight; it looks falling backward and is not artistic any way. (6) Water in foreground far too white. (7) Fearfully over-toned, too much foreground, and please don't use those hideous masks. (8) Good, though the camera was not held quite straight. (9) A little too hard, but a good shot. (10) Too much foreground, and the white at the side is not pretty. (11) Over-printed. (12) Far too much foreground, and negative wants intensifying, we should think. (13) Ditto. (14) The horizon line is not quite straight, and negative wants intensifying. Rub your negative with retouching medium, and then pencil out the scratches.

W. R. HENRY.—(1) By no means bad, but the line in background is painful. (2) Immerse the print in chloride of gold, 1 gr.; hydrochloric acid, 1 drop; water, 4 oz.; then dry and copy in the camera. (3) Water a little too white, and what is the curious mark on the margins? (4) Negative wants intensifying slightly. (5) Technically a good print, but very poor artistically. (6) Over-printed. (7) Good. This is a capital little bit of work. (8) Uninteresting, and if intended for a portrait then the road is unnecessary, if intended for a landscape, then the fignre is not wanted. (9) Snow a little too hard and white; it wants more detail in it. (10) Cut half an inch off the foreground, and we should think the negative would give a better print after intensification. (11) Good. (12) Technically good. (13) Not interesting enough to warrant you taking it. (14 to 19) All good, careful work, but artistically 18 is the best; there is some attempt here at composition of a picture. (20) Poor, not worth taking.

ERA.—(1) Archer's or Chadwick's. (2) Beard's, most certainly, with fine adjustment. (3) 20 ft. is big enough, and from Brin's. (4) Nottingham limes are the best.

W. H. THOMPSON has an R.R. fitted with a rack-work, which he is informed will make an excellent objective for an optical lantern. This, however, is wrong, as a rectilinear lens will not allow sufficient light to get through, being of too narrow a diameter. For lanterns 4 in. double plano-convex condensers are used, and the distance between the light, condenser, and objective should be adjustable, not fixed. Condensers may be obtained from any dealer almost, and vary in price from 8s. 6d. to 15s. The print sent is a good example of halation. The best thing to do is treat the negative as suggested on page 157 of our issue of September 8th, 1893. In future, back your plate with Powell's caramel and sienna backing.

J. SHAW has a Thornton-Pickard shutter, which he uses with a 13 in. lens and a half-plate lens of shorter focus, and he is told that when using both lenses at the same ratio aperture the exposure is not the same. Provided the speed of the shutter is constant, the exposure would be precisely the same. He also finds that a 10 by 8 camera is too heavy for him, and having a half-plate wants to know how to make an adapter to take whole-plates with his half-plate camera. Shew of Oxford Street, sells, we believe, an adapter which fits on to the back of the half-plate to take whole-plate, for about a guinea. We cannot trace an article on this subject, but it would be merely a frame to slide in grooves of half-plate camera back, a short length of bellows, and another whole-plate back.

E. W. F. E. asks, does it injure unvarnished negatives to keep them with pieces of ordinary paper between them. No, not unless the ordinary paper is loaded with antichlor and other chemicals. He also states that sometimes he finds he cannot get all the unaffected salts at the back of the highest lights to dissolve out in the fixing-bath, even in a perfectly fresh one. This is jumping to wrong conclusions; the peculiar white appearance seen at the back of the negatives sometimes, especially in the high lights, is not undecomposed bromide of silver, but metallic silver deposited in an allotropic condition, in which it acts as a mirror and reflects the white light. Such negatives are quite as stable as any others.

MATT-SURFACE.—The easiest way to matt-surface P.O.P. is to obtain some stout matt celluloid, smear this over with a little sweet oil, and wipe nearly clean, place the print in water till soft, then slip the celluloid under the print, with the image to the celluloid, raise out together. Squeegee vigorously in all directions, set up to dry, and when thoroughly dry, strip.

WINTERSETT.—Articles on the construction of a hand-camera appeared in our issues of December 23rd and 30th, 1892, May 27th, June 3rd, 10th, 24th, July 8th, 22nd, and September 16th, 23rd, 1892, and our publishers can supply all these.

HARTINPOL.—To register photographs send 1s. 6d. and two unmounted copies to Stationers' Hall, Ludgate Hill, E.C., or, if you like to send the same to Percy Lund, of Memorial Hall, E.C., they will see the thing through for you.

BET.—(1) We certainly cannot recommend you to get a 15 by 12; this is far too large, we should say, for hill work in India, even with coolies. (2) By using dark slides and carriers you can take any smaller size photograph in any camera. (3) Two, three, or more lenses of different sizes can be fitted to one camera. (4) The most useful lens for portraiture and architecture would be a Zeiss anastigmat, working at *f*/6·3, and next to this any of the Euryscope class of lenses. (5) This is purely a matter of personal taste. (6) We should suggest a 7½ by 5, or whole-plate Hawkeye, with attachment for dark slides and roll-holder, and carry films, both in roll and cut, or else plates in lieu of latter. (7) The Polytechnic, Regent Street, is a very good school. Always pleased to help you, and if we can give you any further help, write, enclosing stamped envelope, and we will reply.

C. B. HEADLY.—Your print is by no means bad for so young a worker; it is over-toned, and there is a suspicion of flare spot, but we should like to see some other work, because it may be fog only.

R. A. PARIS sends us a print, which is taken from a negative the glass of which is cracked, but not the film; he now wants to know how to get the film off. Place the plate on a level stand and pour a thick pool of enamel collodion on it, allow to set, and wash in water till no longer greasy. Then coat a glass-plate with a 20 grain solution of gelatine, allow to set, thoroughly dry. Then place the broken negative in hydrofluoric acid 1 drachm, water 10 ounces, till the film floats free. Transfer to clean water, wash gently, insert under the film the gelatine coated plate, smooth the film out with a soft camel's-hair brush and allow to drain and dry.

GEOMETRIC.—(1) Very good. (2) If you will look carefully at this print you will see that the definition is so good in the centre that the idea of distance is somewhat lost. What you should do is to paint over the trees on the back of the negative, so as to make it print lighter, and thus throw the trees on the right, up more, and give more idea of distance; the particular part we refer to is the right-hand bank, from the rock to the centre of picture. (3) Good. (4) See note to 2, and the water is just a little too white in the centre. (5) The same remark applies to this, and the water runs down hill, does it not? (6) This gives a better rendering of the distance, but even here it is a little too distinct, and is thus brought up too near to the front, and your water in the foreground is too white. (7) The same remark applies to this. The work is certainly up to the standard of our Holidays with the Camera Competition. It is quite possible you would get all the atmosphere and distance you want by using a rough-surface printing-out paper such as mezzotype or sepia platinum. We think you have a slight tendency to under-expose, which gives you this whiteness. A good all-round developer for metol is—

Metol	5 gr.
Sodium sulphite	40 ,,
Distilled water	1 oz.

Use with this a 10 per cent. solution of carbonate of soda in equal parts, and a 10 per cent. solution of glacial acetic acid as a restrainer in place of bromide. Density is readily obtained, but quicker with potash than with soda. Do you want prints back?

W. PECK.—All your negatives are, we should say, much over-exposed; No. 5 is the best. All of them would give very good prints if intensified, but for heaven's sake drop those awful masks, they would spoil any print.

RUFUS, your prints returned to-day. The formula given last week was a misprint; it should have read 4 gr. to the 10 oz.

A. SMITH sends us a print on P.O.P., which shows the pinkiness in the half-tones, and asks the reason of it. See answer below. We have sent this print on to the makers of the paper, and asked them if they can help us. It is not a fault of the paper any way, but seems to be some peculiar action of the gold bath.

C. C.—Excuse us if we reply to you here. You are in a nice little mess, and after having very carefully considered your letter and the rules, we do not see any way out of the difficulty, except by voluntarily winding the whole concern up by general consent, and starting afresh, when of course you can, by careful management, rule the roost and refuse to admit the obnoxious element. The plan you suggest is not possible. Rule out the word amateur and get some good local professional to join you; this will assist you, and all our stores and help are at your service, and we might even run down and give you a special public lecture.

SEAFORD asks us to recommend him a paper which will give about the same tone as Solio paper without any toning, as he has no time for it. The carbon process is the only one which will give all the tones that Solio paper will give without toning.

G. W. HOLMES send us a handbook to the Forest of Dean, and kindly suggests that we might use it in our "Holiday Resorts" columns. We are afraid we cannot use it in its entirety, but if we might make extracts from it, we should be pleased to do so. A cursory glance through the book fully proves that the Forest would be a capital hunting-ground for the photographer, and the work is excellently and brightly written.

SNAP-SHOT is an old correspondent of ours, and we are glad to welcome him back again. He wants to make a hand-camera with a focal-plane shutter, and is afraid it will not work slow enough, and also asks whether a shutter next the plate would more fully expose a plate than a shutter on the lens under identical conditions? A focal-plane shutter will work as slow as ½ of a second, and, if desired, up to 1-1,000th of a second, but from ½ to 1-250th of a second is all that is ever required. A focal-plane shutter will admit more light than any other shutter working on the lens, because the former always allows the lens to work at the full aperture, whatever that may be. To estimate the necessary speed of a focal-plane shutter to take any given object, it is only necessary to find the displacement of image on the ground glass in a second, and from this it is easy to calculate the necessary speed to obtain an image, which will show less than 1-100th of an inch movement.

E. P. VULLIAMY asks us what is the cause of the pink tinge in gelatino-chloride paper; it shows when drying. We are not quite sure, nor are we aware of any decisive testimony on this point. We have found it occur far more frequently with alkaline baths, such as the carbonate. By some authorities it is ascribed to a too weak gold bath. We have always found it occur when vignetting on chloride paper, and was particularly noticeable on the edges of the vignette; and in this case it would be due to gold deposited on the very faintly acted on silver salt. We have also thought it was more apparent if the prints were toned in too bright a light.

G. E. CHILCOTT sent in a print to our last competition and the judges' remarks were, "Negative hard and much over-printed." He now writes as follows:—"With regard to the criticism you have thought fit to publish to the world on the above print, I really cannot help thinking you have made some mistake in describing it as 'much over-printed.' If you mean what you say, I should like to know to what depth you consider the printing should be carried. As all the details in the shadows of the negative appeared in the print sent, how can it be over-printed? I can only add that several who saw the print the night it was sent off are much amused at the result, in common with yours truly, George E Chilcott. P.S.—I have sent along some slides and hope to get some fun out of them." In the first place, we did not judge the prints; we never do, on principle; secondly, we did not write the criticism; and thirdly, we concur in the opinion expressed. The print represents three little girls standing in the surf. All the details in the shadows are visible, but there is little or no detail in the sea foam; this justifies the expression, negative hard. The sky is deeply tinged, and the whole of the print, even the foam, has a tinge over it, which justifies the condemnation "over-printed." It is perfectly true that a rather thin negative over printed might give somewhat the same result. Anyhow, we think the judges were justified in placing the print in the third class. With regard to the postscript of this letter, we have not the slightest doubt the competitor will get some fun out of the slides, for he will receive them back as soon as we can send them off, as they were thrown out by the judges in the first round. We should like to ask Mr. Chilcott to kindly look upon our competitions as more than mirth provoking; this certainly was not the original intention in founding them. They are not mirth-provoking to us, who have a lot of hard work in connection with them, and neither is it exhilarating to see what a lot of fearfully poor stuff is continually sent us. With regard to the print in question, the judges' strictures might have been far more severe, but we refrain from saying more or doubtless the competitor will consider we are actuated by petty spite.

A VERY conscientious amateur asks for a definition of what is an "amateur photographer," and would the sale of a negative to any one for publication or otherwise invalidate one's title to the term amateur? There is no hard and fast line to be drawn. Some consider that an amateur should never receive any monetary remuneration for his work, not even for the cost of his materials; others think that an amateur is at liberty to receive sufficient to pay the cost of material. Personally, we do not consider that an amateur occasionally selling print or negative invalidates his title, but we strongly object to the practice followed by some of selling a number of prints from a portrait negative or from some landscape, even at prime cost. If an amateur takes a portrait we think he should present the sitter with one print, but if more are wanted then the negative should be handed to a local professional to be printed from and the professional must fix his price.

W. HIGH wishes to photograph the moon, and finds that the image obtained is very small, and he wants to get a larger image. The smallness of the image is unavoidable on account of the short focus of lens; we believe that the proportion of image to moon is 1 in. for every 10 ft. of focus of lens used. The only possible way to obtain a larger image is by use of a telescope objective of very long focus, or preferably to use a telephoto lens. We have seen some photographs of the moon taken with one of these, three-eighths of an inch in diameter, which were very fine.

THREE YEARS READER asks, (1) can the sulphocyanide P.O.P. bath be used more than once, supposing the gold has not been thrown down or used up; if so, is the bath acid, and how should a fresh bath be made up, using the old bath instead of water? A sulpho-cyanide bath may be used over and over again until the gold is exhausted and it tones too slow, then the proper quantities of gold and sulpho-cyanide should be weighed out, dissolved in a small quantity of water and the old bath used to dilute to the proper quantity instead of water. (2) Should the hypo fixing bath be neutral alkaline or acid for P.O.P.? The fixing bath should be neutral or alkaline, and the addition of about quarter of an ounce of sodium carbonate to the pint of bath. (3) Before using gold solution in any bath, is it necessary to add chalk to it to counteract acidity? It is not absolutely necessary, but advisable. In the first place acid baths tone more slowly than neutral and the tones have a tendency to grey, and there may be a chance of sulphuration.

PERPLEXED finds that by putting bromide prints into dilute hydrochloric acid after they have been developed and fixed, he is able to obtain a good sepia; he asks whether this is permanent, or whether the print should be fixed again. This is a little difficult to answer, because no data are given as to washing. If the prints are fixed and then thoroughly washed and treated with the acid, and turn sepia, we should say that this colour is due to the formation of silver chloride, which would not be permanent; if placed in the bath immediately after fixing without washing, the toning would be due to silver sulphide, and this is said to be permanent. He also wants a cheap shutter to replace the cap. Either Place's or Tylar's window-blind shutters at 7s. 6d. will answer well. Is there any test to know whether a silver print on P.O.P. is thoroughly fixed? There is no simple practical test; the only thing to do is to learn the appearance of a well fixed print, and use fixing-baths not too weak and not too old, and be sure the prints are left in long enough.

J. R. wishes to know the correct exposure and correct length of magnesium ribbon 1-8th in. broad to take an interior of a coal mine with a lens working at *f*/32 on a landscape plate. In the first place, a landscape plate is far too slow; either Cadett's, Barnet new plates, or Ilford Red Label, Paget or Imperial should be used. We should burn at least four feet of magnesium ribbon, waving it about all the time, so as to avoid very deep shadows, and we should prefer to burn it simultaneously in two pieces. (2) We cannot recommend.

ARGENTINO.—We can certainly recommend the camera you name; it is a really good thing, and the slides are good. This correspondent asks whether a wide-angle lens can be used with the back part of the lens turned to the front, and would not a great part of the view be cut off by its being so far from the front of the camera. A wide-angle lens may be used in this way, and unless set very deep no view would be cut off. The front of the camera-case when using a lens thus is let down right out of the way. Very glad to welcome you back to the fold again.

J. H. C. wants to know how to get a good purple tone on albumenised paper, how deep to print, and how to judge when toning is finished when using the old chloride of lime bath. Printing for this bath must be carried a good deal farther than usual, till, in fact, the whites are fairly tinged. The print must not be quite freed from all nitrate of silver, and toning must be carried on till on holding the print up to the light and looking through it all trace of red has disappeared from all but the very deepest shadows. He also asks whether pyro will keep as well using it from the bottle in its dry state as from a solution. No, certainly not; when kept in the dry state a far greater surface of pyro is presented to the oxygen of the air than when kept in solution.

THOS. HAMILTON asks us rather a difficult question which we can only answer by suggestions. He wishes to take a series of photos for anthropometrical purposes which must be taken at night, and at least half size or full life size. He has tried magnesium, but not with great success, and asks about the Welsbach light. He uses a portrait lens of 12 in. focus, working at *f*/2½. Now to reproduce an object life-size there must be just double the focus between lens and object and lens and plate, therefore the lens would work at *f*/5. We should prefer to use either a Zeiss anastigmat or Goerz double anastigmat, which would give far finer definition, and one of these working at *f*/6, or *f*/7 for the latter, would be preferable. Now as to the light. The Welshach would answer well, but we should prefer the Platinotype Company's oxy-magnesium lamp enclosed in a box with a screen of oiled tissue paper; the use of this latter is to diffuse the light and prevent that blackness of the shadows which is found when using a very small intense point of light. T. H. refers to Friese Green's series of ladies' ears, which were taken by the electric light. These, we believe, were taken with reflected electric light; that is, the light was put in a parabolic reflector painted dead-white inside, and this might be used instead of the oiled screen—we suggest with the oxy-magnesium lamp. In estimating exposure the increased focal length of lens, and therefore the diminished ratio aperture of lens must be taken into account, and in photographing the mouth and moustache the exposure must be sufficiently prolonged to give detail in the hair. We see no advantage in using longer focus lenses than about 12 in., because practically depth of focus is not a very important matter, and there is not much, if any, distortion, because the object would practically be on one plane. Dr. Nobele suggested some little time back a method of anthropometrical photography which may be useful to T. H. He made a wooden frame, and at regular intervals stretched wires, which were tightly strung, so as to form small squares, each side of which was 2 cm. This was placed as close as possible to the subject, and the lens stopped down sufficiently to get both in focus. As the screen is not quite on a plane with the object a slight correction had to be made as follows:—

Let d = the distance between screen and object.
D = " " " lens.
M = the actual size of object.
C = the measure given by screen.

$$\text{then } \frac{M}{C} = \frac{D+d}{D} \text{ or } M = C\left(\frac{D+d}{D}\right)$$

As an example, if d = 10 cm. and D = 2 m. one has 1 m. ·05. As a result then $M = C$ (1·05 m.), that is to say, one has to multiply the number of centimetres given by the screen by 1·05 to obtain the true measure. Possibly by using a method such as this it would not be necessary to get so close to object or else the negatives could afterwards be enlarged, and they would at once bear a measure on their surface with the image.

W. H. WALLEY wants to give a lantern exhibition in a room where there is no gas, and asks whether compressed coal gas would give a good result. Compressed hydrogen should be obtained; this is sold by nearly all the big oxygen firms, we believe. The consumption per hour is, we think, about 9 ft. To paint opals with oil colours the best thing to do is varnish the opal first with good crystal varnish.

The Amateur Photographer

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 472. Vol XVIII.] FRIDAY, OCTOBER 20, 1893. [Price Twopence.

OUR VIEWS.

"To hold as twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

United Kingdom.....	Six Months,	5s. 6d.	 Twelve Months,		10s. 10d.
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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

In the current issue of the *Review of Reviews* Mr. W. T. Stead foreshadows his daily paper, full details of which will be announced in the Christmas number of the above magazine. We believe that photographic illustrations will play no small part in the same. Mr. Stead has generally made everything he has put his hand to a success, and we shall look forward with interest to fuller details.

Talking of forthcoming papers, that impersonal busybody who is so aptly termed by the French language as "on dit," has been spreading abroad the rumour that we are to have yet another weekly photographic paper, and that English energy, with the assistance of recently imported American gold, would be the moving spirits. As we have been somewhat more behind the scenes than others, we were much amused to see a correspondent in one of our contemporaries last week give this rumour in black and white.

No, friend Cosmos! You may take it as authoritative from us that the said report is merely a canard. Surely with five weekly journals, besides several monthlies, most people will recognise that the photographic reader is well catered for. The American eagle will not flutter either weakly or weekly.

The Christmas number of the *Art Journal* is always a valuable addition to anyone's library, and the forthcoming number, which will be ready at the end of this month, promises to be as good, if not better, than its predecessors. The subject will be "The Life and Work of Mr. Holman Hunt." Archdeacon Farrar is to describe his principal pictures from the Christian ethical standpoint, and the technical side will be treated by Mrs. Alice Meynell.

We now quote from the circular sent us:—

"The 'Annual' will as usual be profusely illustrated with reproductions of the artist's principal works, and there will be three full-page plates, of which 'The Light of the World' and 'The Shadow of Death' will be photogravures, while 'The Finding of the Saviour in the Temple' will be a line-engraving. This last is worthy of attention from the fact that it will in all probability be the last line-engraving published in England, as the present race of line-engravers is now almost extinct, and it would be well-nigh impossible to get more of such work done, even if it were required."

Surely this is one of the most striking testimonies to the increase of the use of photographic processes and the inevitable damage and practical extinction of what was once an important branch of our fine arts. The introduction of colour-sensitive plates and the advances made in photogravure and process work of all kinds have militated most powerfully against hand work of many kinds.

ONE of our well-known London societies has got itself into a quandary, and the dove-cotes under the shadow of the Falcon are in a state of flutter. Last year a lady was elected an honorary member, now some one has proposed his wife as a member, and the misogynists are up in arms, and black balls are at a premium. We must confess that the situation is curious; one year a lady is elected an honorary member, the next year the same society goes into convulsions because one of its members wants to bring his wife down.

THE uncertainty and coyness of a woman is proverbial, but now she certainly may have the laugh of this society, and apply to it with truth, Virgil's reproach to her own sex "Semper varium et mutabile."

WE must confess that we had no idea that our competitions were so favourably looked upon by so many readers who do not even compete. To answer every kindly letter we have received is an impossibility, but to one and all we are grateful, not only for the kind expressions, but also for the kindly criticisms and helpful suggestions, some of which we shall certainly adopt. Every letter, even those which criticise our methods most strongly, does so in kindly, helpful manner.

STILL, we have a soreness which even these letters have not removed. We have determined, as previously announced, that would-be competitors must for the forthcoming competitions send all the entry forms which appear in our weekly issues with their slides or prints, so that constant readers only should compete, and the lantern-slide competition which closed on Saturday last has brought in the smallest number of entries ever sent in. This is not encouraging.

IS it that many past contributors to our competitions merely entered to get a medal, and never bought the paper, or is it too much trouble to cut out the four coupons, as suggested by one correspondent? Of course, if any one is a half-yearly or annual subscriber, it is merely necessary to state that fact, and the coupons may be omitted. However, we give yet another chance for prizes to our readers.

WE have had placed at our disposal the sum of £5, as prizes for photographs most suitable for advertising purposes. We have divided this sum into three as follows:—

First prize ..	£2 10s. in cash or apparatus to value.
Second prize..	£1 10s. in cash or apparatus to value.
Third prize ..	£1 in cash or apparatus to value.

And the following are the conditions:

1. All the prints shall become the property of the donors of the prizes.
2. The negatives of the prize prints shall become the absolute property of the donors.
3. The competition is open to all without any restrictions.
4. The judges shall be at liberty to withhold any prize, should they think it desirable.

Latest date for prints, which must be marked on back "Advertisement Competition," November 30th.

IN connection with this competition we may point out that striking figure subjects would be the most likely to score, and that few if any landscapes pure and simple can be adapted for this purpose. The figures should stand out boldly, against a light background for preference. We may suggest, to give our intending competitors an idea of what is required, that pictures which convey some idea are the best, like the well-known "Bubbles" of Pears, the tea-drinking maidens of Mazzawattee, etc.

THIS should not be a difficult competition, because the field is such a large one, and our competitors are left with a very free hand. Everything that is advertised may be utilised — soap, blacking, candles, milk, tea, insurance, cycles, etc., etc.

WE also offer another prize to our readers. We are commencing the preparation of next year's Annual, and have determined on certain articles and subjects to be written on, but we offer a three months' free subscription to the "A. P." for the best suggestions, provided they do not agree with our own plans. Further than that, we are open to receive for consideration good practical articles, which must not be less than ten or more than twenty pages, *i.e.*, which are equal to not less than 7,000, or more than 14,000 words, exclusive of illustrations. These articles we are willing to pay for at our usual rates.

PHOTOGRAPHY WITH MAGNESIUM.

THE magnesium light as used for photographic purposes may be said to be produced by three distinct methods: the first by burning a piece of ribbon, the second by burning magnesium powder, and the third by an explosive mixture. Sometimes magnesium wire is recommended, but the diameter of the wire is so small that the heat evolved in the burning causes the wire to melt and the small glowing point may then drop off, and the continuity of the light be interrupted; therefore the wire is quite unsuitable from this reason, and also because the amount of wire which has to be burnt is so great, and the duration of the sitting prolonged.

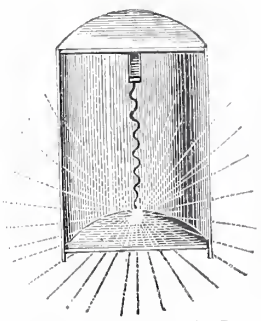


Fig. 1.—LANCASTER'S LAMP.

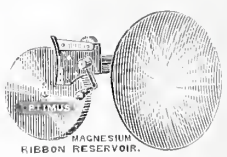


Fig. 2.—OPTIMUS HAND LAMP.

Magnesium ribbon, however, acts very satisfactorily. This may either be held in the hand, or else a specially devised lamp may be used, but there are two precautions necessary to be observed, or else the results are failures. If the ribbon has been kept some time, especially in a damp place, it becomes covered here and there with a white film of oxide, and this gives rise to flickering of the light, and, indeed, may cause the light to go out altogether. Then again, if the light is held in the hand there is danger of getting burnt, and of the particles of hot oxide dropping on to a carpet, cloth, etc.

Holding the ribbon loose in the hand is not to be recommended, especially when some capital little lamps are to be obtained commercially which avoid any trouble. Fig. 1 shows a simple form of lamp which is intended to confine the products of combustion. This is an advantage, not only in that it keeps the room in which one works free from fumes and

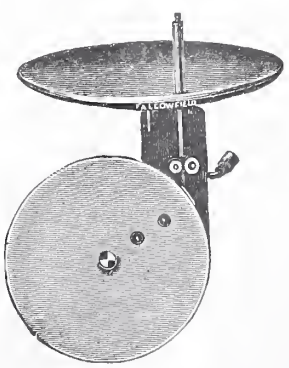


Fig. 3.—FALLOWFIELD'S HAND LAMP.



Fig. 4.—OPTIMUS CLOCKWORK LAMP.

prevents any foggy appearance, but if used in a living room the settlement of the white magnesia soon gives everything the appearance of having been floured. The back of this lamp forms a reflector, and the front glass may be replaced by oiled tissue paper so as to diffuse the light more. Mr. Humphrey suggested the use of a glass balloon or globe filled with oxygen and the insertion of a helix of magnesium ribbon, the globe being swung backwards and forwards during the exposure. The light emitted by magnesium burning in oxygen is far more actinic than when burning in air, and therefore less exposure is required. The next class of lamps are those in which a coil of magnesium ribbon is fed either by the fingers, by a handle, or by clock work, as shown in figs, 2, 3, 4, 5, and 6.

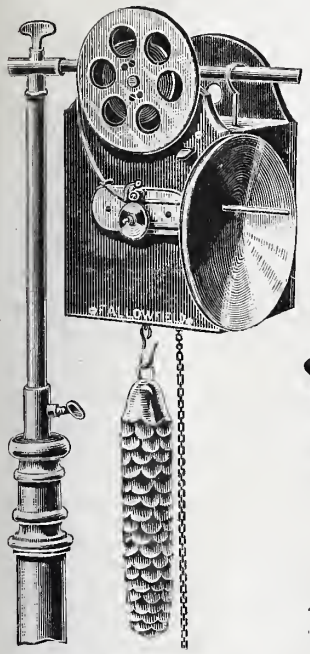


Fig. 5.—FALLOWFIELD'S CLOCKWORK STUDIO LAMP.

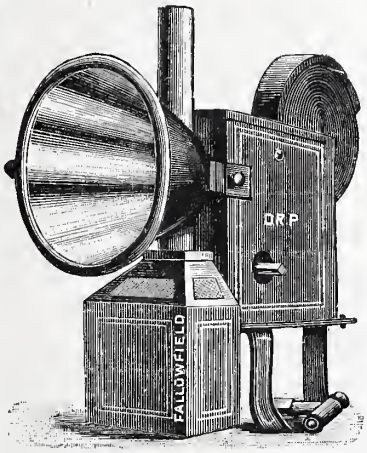


Fig. 6.—FALLOWFIELD'S ENCLOSED STUDIO CLOCKWORK LAMP.

These are shown as illustrating the different styles adopted by certain makers, and possibly there are others on the market which are equally efficacious. To the particular uses of these we shall recur again. There are certain objections to the use of these lamps which are not insuperable. In the first place, the ribbon in burning becomes coated with a film of oxide which prevents the lamp from burning regularly and finally puts it out. Therefore it has been suggested that a small gas or spirit flame should be introduced below the aperture whence issues the ribbon, and thus keep up the burning, but unless very accurately adjusted this prevents the accession of the necessary oxygen to the ribbon, and this latter burns with a smoky red flame absolutely useless for photographic exposures. To prevent the light suddenly going out from the coating of the ribbon with oxide, Schnauss suggests dipping it into collodion or, preferably, a solution of celluloid, and then to allow it to dry. Obviously keeping the ribbon in paraffin or petroleum will prevent oxidation, and if the paraffin be allowed to evaporate or be wiped off there is less danger of the ribbon going out whilst burning.

Burslem.—The monthly meeting was held on 3rd inst., Mr. E. B. Wain, President, in the chair. Mr. A. Shorter, Vice-President, gave an interesting description of his recent visit to Switzerland and the Italian lake district; he used the Artist twin-lens camera, and showed some excellent results with it. A portion of the lecture was illustrated by lantern-slides made by Mr. Shorter; but the lecturer explained that unfortunately his camera was sent way with another person's luggage, and he did not recover it till too late to be of any use to him in Italy; he had, therefore, to use professional slides in describing his tour in Italy. The "A. P." competition prints were also on view.

Flotsam and Jetsam.

Not many days ago the papers were full of long and detailed accounts of the military manœuvres in Berkshire, when the special correspondents, with their customary frankness and freedom, told the men whom we pay handsomely to wear fine uniforms and command our Tommies, that most of their strategy was wrong, and that if the cartridges had not been blank their commands would have been swept off the face of the earth.

Whether the newspaper men or the officers were right will never be known perhaps, though doubtless both will do their duty when the time for actual fighting comes. Meanwhile, it is of interest to know that Sir Camera took a prominent part in the manœuvres and achieved some wonderful feats. The Royal Engineers had men with cameras stationed in captive balloons at heights varying from 140 to 1,000 ft.

From these points of vantage—and in time of war points of exposure too — no doubt some admirable photographs of the country for five and six miles around were obtained. The difficulties arising from the variations in the state of the atmosphere and from the wind may be imagined but they were all surmounted. Perhaps the elevated position did it. Most things could be surmounted from such a height.

Exposures of from a twentieth to a fifty-sixth part of a second were given. And what was the use of them? Why, as it was pointed out at the time, such a knowledge of the country would be invaluable to a field officer if it could be supplied to him quickly. That is the point to which attention will be directed now—how to develop and print from the plates most quickly, so as to supply the staff with copies of the photographs.

Young gentlemen and ladies of vagrant amatory tastes may find consolation in the new fashion which is said to be making headway. It is to have a composite photo taken of all your intimate friends. Of course, it would never do to mix the sexes. "My sweethearts," however, would look charming if combined into one on a gentleman's mantelpiece.

The ladies are especially taken with the idea, if one may judge from the remark of one of them, quoted by an evening contemporary recently, "It is so charming to enjoy the portrait of somebody who is all one's intimate friends at once!"

A new tele-photographic lens, says the *Globe*, has been brought out by a Philadelphia gentleman, Mr. A. B. Parvin, which can be contained in an ordinary lens tube $2\frac{5}{8}$ in. long, and requires no delicate adjustment before taking the focus. It differs from the lenses invented by Dr. Miethe and Mr. Dallmeyer in that it is adapted for instantaneous work, which is a great advantage.

It is intended more especially for the ordinary worker and the ordinary camera, and has been found to give admirable results at distances from 100 to 1,000 yards, and good pictures can even be taken at a distance of several miles.

We have long known that the law was "a hass," but did ever any one hear before of a magistrates' court becoming a photographer's assistant? There is a man, whose name is Clark and who is laid by the heels at Chelmsford on a charge of horse-stealing. Following their usual custom, the authorities tried to photograph him.

BUT it was of no use. He was nervous or disinclined, and the attempt proved a failure. So, when he had to appear in court, a loophole was cut in a desk and the camera so arranged that it covered the prisoner when he was charged. All unconscious of his danger, he posed excellently, and the operator, hiding himself behind a friendly copy of a newspaper, secured a splendid likeness.

Is there not a wrinkle here for workers in portraiture? Not one in a hundred sitters but is stiff and self-conscious and other than his natural self before the levelled lens. The method adopted in the case of Clark is that adopted by a certain Aberdeen photographer, mentioned in these columns some time since, and it might with advantage be more generally followed.

ANCHORITE.

Letters to the Editor.

VEVERS' ENVELOPES.

SIR,—I see you print my warning concerning these envelopes today, which should have been inserted last week. Since then Mr. Vevers has replied, and taken some trouble to investigate the matter, with the result that though he must admit the damage was done by the envelopes, he cannot discover any reason for a thing which has never happened before with his envelopes, as far as he is aware. Have any of your readers experienced any misfortune with them?—I am, etc., C. W. BASSANO.

Haden Cross, Old Hill, Oct. 13th.

* * * *

"AN EXPLANATION."

SIR,—In your notice of to-day's date on the pictures in the Pall Mall Exhibition, you say that the exhibits 320 and 326 "require some explanation, as at present no one but the exhibitor knows what is meant." I think it only fair to say that an explanation accompanied the pictures to the effect that they were "examples of a method of modifying platinum prints, applicable after the ordinary treatment is finished, and especially adapted to the improvement of defective prints." The prints themselves were intended to show the effect of the modification. The Photographic Society omitted this description from their catalogue; the Secretary stating, in answer to a letter of mine on the subject, that it was considered undesirable to refer at length to any process, particulars of which were not given.

I very much regret that the pictures were under the circumstances accepted, as they can hardly be of any interest as an exhibit without any indication of what they are intended to illustrate.

The process will shortly be described in full at one of the meetings of the P. S. G. B., the Secretary having kindly promised to afford me an opportunity of giving a demonstration of the method employed.—I am, etc., ALFRED W. DOLLOND.

* * * *

THE MADRAS EXHIBITION.

SIR,—Will you kindly allow me to state for the information of intending exhibitors at our coming show—

1st. That all pictures should be addressed to the care of the Hon. Sec., Amateur Photographic Society of Madras, Royapuram, Madras.

2nd. That no forms of entry are required, but a list of titles for catalogue should reach me by November 20th, 1893; the list should also state the particular prizes for which the pictures are competing.

Thanking you in anticipation for your courtesy,—Yours faithfully, FRED. DUNSTERVILLE.

* * * *

PINK TONES ON CHLORIDE PAPER.

SIR,—We have received the prints forwarded by you for our opinion, with special reference to the complaints of pinky half-tones, and in reply we have numbered the prints and would remark as follows: Nos. 1 and 2 appear to be on pink paper and are perfect in their way. No. 3 has been toned in a bath which we never heard of, and naturally we cannot be responsible for any results. No. 4 has been carelessly washed, and toned in an exhausted bath. No. 5 is perfect to our mind as regards tone, and shows no evidence whatever of pinkiness. No. 6 has been toned, we should say, in too quick a bath. No. 7 shows evidence of the grossest carelessness in handling, and the competitor's toning-bath was evidently in a disgusting, dirty state.

You will see therefore that there is a ready and easy explanation of your competitors' defects, and we would like to add that it would save yourself and your correspondents very much trouble if they would kindly read the long articles on this subject by Professor Sexton and Mr. Bothamley. These articles have been printed in *Scraps* and are now reprinted in pamphlet form which can be had either through all dealers or direct from us.—Yours faithfully,

For the Britannia Works Co., Limited.,
J. H.

* * * *

STRIPPING FILMS.

SIR,—Referring to your reply of last week (p. 253) to "R. A., Paris," as to getting the film off a cracked negative glass, may I suggest that a much simpler plan is to use Cresco-Fylma? Use the solution, say one-quarter the strength required for enlarging. This is a very convenient method of transferring films from glass to celluloid.—I am, etc., H. A. J.

* * *

PLAGIARISM OR ——— ?

SIR,—My attention has just been called to an article in the *Photographic Times* of New York, September 29th, 1893, p. 544, by Mr. Walter E. Woodbury, in which the writer describes the method of developing gelatino-chloride paper recently shown and published by us, giving exactly the same formula for development.

As this article is unfortunately, although no doubt unintentionally, worded in such a way that the reader may suppose that Mr. Woodbury claims the method as his own discovery, and as such supposition places us in a position requiring explanation, I will ask you to kindly allow me to state the following facts:—

The process was discovered by us more than a year ago, and Mr. Woodbury being in our employment, it was shown to him, under the promise of secrecy, some time last winter. I do not know the exact date, but certainly before he left our service in February.

On 21st February we deposited a sealed paper containing a description of the method with Mr. H. Sturmey, Editor of *Photography*, who at our request recently opened and published it in *Photography*, October 5th and 12th, together with a statement of how and when it came into his possession.

Why Mr. Woodbury has now published the process without our knowledge or permission I do not know, and can only suppose that in the change and excitement of his new position, and after the lapse of so many months, he had forgotten the circumstances under which he became possessed of the information. This seems the more likely as he appears to have also forgotten an important detail, giving as he does *iodide* of potassium instead of *bromide* for the preliminary bath. Iodide is practically useless for the purpose.—I am, etc.,

For the Paget Prize Plate Company,
WM. J. WILSON.

* * * *

THE BENEVOLENT.

SIR,—We have very many applications for the loan of a camera or money to purchase a second-hand camera from men who are perfectly willing to work, but who have been forced down by illness and other circumstances. If any of your readers have old apparatus that is still light-tight, though otherwise superannuated, we could make good use of it; and as our grants this year have far exceeded our income up to the present, and as we have in prospect many urgent applications owing to the extremely bad photographic season, we feel loth to spend money on even the cheapest of second-hand camera if we can obtain old disused ones from sympathisers.—Yours faithfully, for the Committee, H. SNOWDEN WARD (Hon. Sec.).

P.S.—Stout soled boots, clothing, and hats we can well dispose of if any readers can spare them.

Memorial Hall, Ludgate Circus, E.C.

* * * *

LOAN OF SLIDES.

SIR,—The students of the Cambridge University Extension Lectures Association are to have a lecture illustrated with limelight on the "History of Florence," next week. Could you or any of your readers let us have some good slides on Florence? We would take every care of them, and they would be much appreciated. Friday week is the day.—Yours faithfully, J. E. HARDWICK.

7, Belford Terrace, Sunderland, Oct. 16th, 1893.

* * * *

EXCHANGING SLIDES.

SIR,—Will any fellow amateur exchange, *on loan*, a set (or sets) of lantern slides with me. I want to give a number of lantern entertainments to our young men's institute, school children, parents, etc., this winter, and without some such help should be unable to do so. I have no doubt that many of your readers are hoping to give similar entertainments, so that the loan exchange would prove mutually advantageous. By this means our audiences would have the pleasure of seeing many scenes which otherwise they could not. —I am, yours truly, J. LAXTON.

Address with Editor.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER II.

(*Continued from page* 243.)

(1) *The Flocculent Bromide of Silver.*

If silver nitrate is mixed in the cold with a soluble bromide salt, or hydrobromic acid in diluted solutions of ·5 to 1 per cent., a curdy precipitate of bromide of silver is formed. This is quite white if an excess of the silver salt is used; on the contrary, deep yellow if one employs an excess of the bromide salt. The white or yellow curds soon settle down if the liquid is neutral, but slowly if it is acid and is shaken. The white and yellow curds, especially the yellow, cake together if they are left alone in the liquid, and assume in time the form of a plastic mass of a pale yellow or strong light yellow colour, according to the original colour of the curds. If one leaves this by itself in the air, after it has caked together as much as possible, it gradually contracts, becomes hard, and forms an opaque mass.

The white as well as the yellow flocculent bromide of silver blackens very quickly even in diffused light, also in the caked condition, but after it has become hard it becomes only greenish in diffused light. In a solution of an alkaline acetate the flocculent bromide of silver settles down spontaneously.

(2) *The Powdery Bromide of Silver.*

Flocculent bromide of silver is converted into the pulverulent if it is shaken violently with water, and very quickly indeed if the curds have been precipitated from a neutral solution, or very slowly if from an acid solution.[1] At the same time the colour is changed, it is converted into a state of much finer division of a whitish-yellow colour. If it is stirred up with water it forms a paste, which, placed on linen, retains the water very strongly.[2] If one allows it to dry spontaneously in the dark in the air, it contracts, but remains powdery and yellowish-white. With the slightest touch it falls to pieces; but if one warms it after drying, it becomes hard and assumes an intense yellow colour. In the pasty state it is less affected by light, but if dried at ordinary temperatures it is changed much quicker than the powdery chloride of silver.

(3) *The Granular Bromide of Silver.*

If one pours into boiling water the flocculent or powdery bromide of silver which has been stirred up with water, it is changed instantly into a dust of extraordinary fineness; this is the granular bromide of silver. It is produced direct if to a boiling solution of silver nitrate (1 : 1,000) is added a sufficient quantity of a boiling, very dilute solution of bromide of ammonium.

The granular dust which one obtains from the flocculent bromide of silver is of a dead yellowish-white, whilst that from the powdery bromide of silver or from very dilute solutions as above, is of a brilliant yellowish-white. After several days' boiling (with the continual renewal of the water) the bromide of silver is divided more and more, till it finally remains suspended in the water and makes the same milky. In this state the bromide of silver shows a brilliant reflection and settles down only after a long time. After pouring away the liquid it appears then pearl-white. On shaking with a concentrated solution of bromide of ammonium the pearly-white bromide of silver becomes instantly an intense yellow.

The matt, as well as the brilliant yellow granular bromide of silver, as also the pearly-white kind form the substances most sensitive to light, which fact Stas stated. It is sufficient to boil them for two or three seconds in a glass flask in the pale blue flame of a Bunsen lamp, in order to blacken them.

Stas remarks on the solubility of bromide of silver in water. The flocculent and powdery bromide of silver is insoluble in pure water or in water acidulated with nitric or sulphuric acids at temperatures between 0° and 33° C.; on the other hand, above 33° C. it is markedly soluble (still in very small quantity). The granular bromide of silver is only sensibly soluble at a temperature above 50° C., and then only faintly.

If one mixes solutions of flocculent bromide of silver prepared above 33° C. with solutions of bromide of potassium or silver nitrate, they become cloudy. One million grammes of boiling water dissolve 3·5 g. of the granular bromide of silver. If the water contains 1 per cent. nitric acid, one and a half times this quantity is dissolved. If a saturated solution of bromide of silver is allowed to cool, all the bromide of silver does not separate out.

The solution retains, after the manner of a supersaturated solution, a certain quantity of the bromide of silver. The addition of 1-10th normal solution of bromide of potassium or of 1-10th solution of nitrate of silver causes, however, the instantaneous separation of the bromide of silver. Stas confirmed further the small solubility of bromide of silver in a solution of acetate of soda, and, indeed, even in the cold, 1 litre dissolves ·0029 g. of bromide of silver at 15° C., that is to say, double as much as pure boiling water is capable of taking up of the granular bromide of silver. Solutions of mercuric nitrate dissolve bromide of silver somewhat more strongly, in 100 c.cm., ·038 g. AgBr, but partly decompose the same.

The assertions of Stas found fresh confirmation by the thermo-chemical researches of Berthelot.[3] Berthelot examined the development of heat, which is set free in the formation of the two longest known modifications of the iodides of mercury (the yellow and the red). He observed on this point that in the conversion of the yellow into the red modification a development of three heat units took place. With reference to iodide of silver he found that the same was formed as an amorphous precipitate in an unstable modification, and subsequently passed into a more stable amorphous state. If, for instance, silver nitrate is poured into iodide of potassium (in solutions 1 equivalent in grammes to 2 litres), after two minutes 26·9 heat units were set free, of which 21·1 after the first half minute; the remainder of 6·8 heat units were developed only by degrees. If iodide of potassium is poured into silver nitrate, after half a minute 26·9 heat units are set free. Also the iodide of silver, separated from the solution of iodide of silver in iodide of potassium by the addition of water, appears not to be converted into a stable condition. These phenomena are caused by the alteration of condition. After standing some time, however, the precipitates yield the same heat of solution (in iodide or cyanide of potassium), whether one takes now the stable, the amorphous, or the crystalline variety. The said thermic changes show themselves only in the amorphous and not in the crystallised iodide of silver. This applies equally for chloride, bromide, and cyanide of silver. Since the develop-

[1] Similar observations have been frequently made in preparing photographic emulsions.—(Eder.)

[2] It is a matter of fact that gelatino-bromide of silver plates apparently soon become dry in the air, but stubbornly for a long time retain moisture, which causes their sticking together.—(Eder.)

[3] *Compt. Rend.*, 1881, vol. 93, p. 870.

ment of heat takes place in the formation of polymeric products one may conclude on a polymerisation, or at least on a change of the chemical functions of these compounds, according to their preparation. The existence of crystalline and amorphous bromide and chloride of silver is proved also by the electrical resistance, as also the existence of double compounds of the silver haloids amongst themselves proceeds from the same cause.

According to Kohlrausch the melting point of chloride of silver lies above 485° C.,[1] according to Rodwell at 451° C., and of iodide of silver at 450° C., according to Rodwell at 527° C.; the mixture of equal equivalents of chloride and iodide of silver, however, melts at 260° C. Chloride, bromide, and iodide of silver conduct electricity above their melting points very well. The best conductor is the chloride, the worst conductor is the iodide, whilst the bromide stands midway. The resistance of chloride and bromide of silver increases very strongly with the setting of the same (when they change from the amorphous into the crystalline modification), and increases on cooling to 20° C. to more than a million times the initial power. Iodide of silver, on the other hand, does not absolutely change its resistance at its setting 540° C., but shows a rapid augmentation of the same at a temperature of 145° C., at which it is converted from the amorphous into the crystalline state.

(L) Silver chloride (Ag.Cl.) has been also described by Stas in several modifications, which can be grouped together like those of bromide of silver.

Two milligrammes of pure chloride of silver are dissolved in 1,000 c.cm. of boiling water; traces of hydrochloric acid or silver nitrate precipitate the chloride of silver from the same (Stas and Cooke).[2] It is more easily soluble in water than bromide of silver, and the hot saturated solution deposits on cooling a granular powder, which appears under the microscope as little cubes. Chloride of silver dissolves in solution of chloride of ammonium tolerably easily, less in chloride of potassium or sodium. It is easily soluble in concentrated ammonia, namely, about 1 : 12. If chloride of silver is heated with liquid ammonia in a closed tube, it dissolves readily and separates out in the cold in laminar crystalline needles of ammonio-chloride of silver, $AgCl.2NH_3$, which in the air and in water are decomposed with loss of ammonia, and are blackened by light. Iodide of silver behaves similarly, and forms $AgI.NH_3$, whilst bromide of silver gives a negative result.[3] Chloride of silver precipitated from a concentrated solution of silver is more easily soluble in hydrochloric acid[4] than when precipitated from a dilute solution.

C. Schierholz[5] has found that silver chloride dissolves to some extent in concentrated solution of potassium chloride, more readily in sodium chloride solution, and still more in ammonium chloride solution; concentrated solution of ammonium chloride at 15° C. dissolves about an equal quantity of silver chloride as there is ammonium haloid present. When diluted to 1 : 10 or 1 : 20, the solvent power of the ammonium chloride is very little; at higher temperatures the solubility of chloride of silver in this solution increases very much. Chloride of silver is slowly converted into bromide on boiling with dilute potassium bromide solution, on the other hand, very quickly by boiling with concentrated potassium bromide solution and diluting with water. Silver bromide is to some extent soluble in sodium chloride solution, but much more plentifully in concentrated potassium bromide solution. Silver chloride is converted into the bromide by solution of potassium bromide and freely dissolved, but on diluting with water the silver bromide is precipitated. Silver iodide is only slightly soluble in concentrated solution of the alkaline chlorides, but freely in solution of potassium iodide.

Guntz[1] has also examined the effect of heat on chloride of silver, and found that under certain conditions it rendered the silver chloride capable of being developed the same as light. Silver chloride, which has been exposed for a short time to light may, as is well known, be developed, and this even before any visible coloration takes place. The same property is given to silver chloride if it is boiled with water for some time in the dark.

(M) Silver iodide (AgI) is a yellow precipitate, which is very insensitive to light, so long as it is precipitated in the presence of iodide of potassium; on the other hand, it is far more sensitive to light if the silver nitrate be in excess. The differences are especially of importance in the wet and dry collodion processes, where principally iodide of silver is used.

Iodide of silver is known in the crystalline and amorphous states.

Iodide of silver becomes paler coloured whilst in contact with ammonia; it is dissolved extremely little by ammonia, even in concentrated solutions only 1 : 2,500 (Wallace and Lamont). In solution of iodide of potassium, as well as solution of nitrate of silver it dissolves pretty freely with the formation of double salts, and is again separated out by the addition of plenty of water.

Acworth[2] studied the effect of light and heat on the silver haloids.

He precipitated the silver from water or alcohol, and spread the washed precipitate on glass plates, with and without addition of gelatine. When dried, the films of silver haloid were submitted to the action of heat at 50°, 100°, and 160° C., and then treated with a developer. The results were that all the silver salts were increased in sensitiveness by heating to 50° C.; with bromide of silver and gelatine the maximum of sensitiveness was attained at 100° C.; at 160° C. no image but only fog was obtained; at 200° C. the developer had no further action. Iodide and chloride of silver behave in the same way.

III.—Properties of the Most Important Soluble Bromide, Chloride, and Fluoride Salts.

(A) *Of the Bromides.*—Bromide of potassium and bromide of ammonium are exclusively used.

Bromide of potassium is quite stable in the air. It crystallises in colourless or white cubes, which are easily soluble in water. Bromide of ammonium forms small white crystals, which become damp on exposure to the air. It is decomposed by long boiling with water with evolution of ammonia, and gradually becomes more acid, as the author has already proved[3]; with bromide of potassium such a decomposition has not been proved.

The solubility of potassium bromide in water is so considerable that the use of this salt is not handicapped in this respect. One part of bromide of potassium dissolves, for instance, at 15° C. in 1·62 parts of water;

[1] *Annalen der Physik und Chemie*, 1882, vol. 253, p. 642.
[2] *Jahresber. f. Chemie*, 1881, p. 300. *Chem. News*, vol. 44, p. 234.
[3] *Ferreil, Compt. Rend.*, 1884, vol. 98.
[4] *Ruyssen and Varenne, Jahresber. f. Chemie*, 1881, p. 301.
[5] "Sitzber. d. K. K. Akad. d. Wissensch.," 1892, vol. 101, p. 4.

[1] "Compt. Rendus," 1891, vol. 113, p. 72.
[2] *Cam. Club Journ.*, 1891, pp. 205 to 208.
[3] Eder. "Bericht der Akademie der Wissensch.," Vienna, 1880; *Phot. Wochenbl.*, 1881, p. 74. Bromide of ammonium in watery solutions is split up by heat into hydrobromic acid, which remains in the liquid, and into ammonia, which escapes, $NH_4Br = BrH + NH_3$; this decomposition is perceptible even at 30° C., and is increased by boiling. However, there is formed, even by half to one hour's boiling, not more than ·4 g. hydrobromic acid from 100 g. bromide of ammonium.

one part of bromide of ammonium in 1·29 parts of water[1].

If one wishes to use bromide of potassium in any formula in place of bromide of ammonium, 1·215 parts of bromide of potassium must be taken instead of one part of bromide of ammonium. In using bromide of potassium one has to see that it does not give an alkaline reaction (in consequence of an impurity of carbonate of potash), and is not strongly contaminated with chloride of potash. Pure bromide of potassium for photographic purposes was first produced at Dr. Eder's suggestion by the chemical factory of Dr. Schuchard, of Görlitz, later also by Schering, of Berlin, and others; and is now easy to procure.

Bromide of ammonium and bromide of potassium behave very much alike in gelatine emulsion, so that both can be used with success. Bromide of potassium has the advantage that it is stable in air, crystallises easier, and is easier to prepare pure. Bromide of ammonium gives, especially in the "boiling method," clearer emulsions, and retards the formation of fog, because during the cooking the amount of hydrobromic acid increases, which acts as an anti-fogger. In the emulsion processes with ammonio-nitrate of silver, Dr. Eder prefers bromide of potassium. For emulsions from which the water is removed by means of alcohol, and by this freed from the soluble salts, the use of bromide of ammonium instead of bromide of potash is worth recommendation, a fact which Dr. Eder pointed out,[2] in March, 1881. The ammonium salts are much more soluble in alcohol than the potassium salts; this applies as well to the bromide as the nitrate. Nitrate of potash is much more difficult to dissolve in alcohol than nitrate of ammonium: 1 part of nitrate of potash dissolves in 100 parts alcohol, 1 part nitrate of ammonium is, however, soluble even in 2 to 3 parts of alcohol.

Bromide of zinc has been tried experimentally; Brooks[3] obtained good results, Abney[4] sometimes good, sometimes bad, with this salt.

Impurities of the Bromide Salts. — The commercial bromide salts are adulterated with chlorides, etc. Jubert[5] found bromide of potassium which contained only 83 per cent. of bromide of potash, and bromide of ammonium which only contained the half NH_4Br (with sulphate of ammonia). Way[6] found bromide of potassium with 3 per cent. chloride of potassium; Abney[7] some, which contained 25 to 30 per cent. chloride of potassium. Bromide of ammonium may also be adulterated with nitrate of ammonium. If bromide of potassium contains bromate of potash, a yellow colouration is formed after addition of hydrochloric acid by the setting free of bromine.

(B) *Chlorides.*—Of the chlorides, chloride of ammonium (NH_4Cl) and chloride of sodium (NaCl) are chiefly used for the preparation of gelatino-chloride of silver. Both are easily obtained in a pure state. Pure chloride of sodium occurs also commercially in large crystals as clear as water, known as "Edel salz," or "sal gemmæ."

(C) *Iodides.*—The iodide of potassium (KI) is now mostly used for gelatine emulsions, and may be obtained with the greatest certainty in the pure state.

(D) *Fluorides.*—Fluoride of sodium, with bromide of potassium for the preparation of emulsion, has been recommended by Prof. Husnik, in order to obtain very vigorous working emulsions for line reproductions; it has found, however, no further use.

IV.—Ammonia.

Ammonia (NH_3) is prepared in watery solution ("caustic ammonia," or "liquor ammonia"). The strength of the ammonia must be accurately known. This is of great importance. Ammonia must be handled cautiously in the emulsion as well as in the developer; a little too much may spoil everything. One must note that the strength of the commercial ammonia differs frequently from two to three fold. Dr. Eder uses only ammonia of the specific gravity ·91 at 17° C., which is also official in pharmacy.

TABLE OF THE STRENGTH OF AMMONIA IN WATERY SOLUTIONS, AND THE SPECIFIC GRAVITY OF THE LATTER AT + 14° C (CARIUS).

Specific Gravity.	Ammonia per cent.	Specific Gravity.	Ammonia per cent.	Specific Gravity.	Ammonia per cent.	Specific Gravity.	Ammonia per cent.
0·8843	36	0·9052	27	0·9314	18	0·9631	9
0·8864	35	0·9078	26	0·9347	17	0·9670	8
0·8885	34	0·9106	25	0·9380	16	0·9709	7
0·8907	33	0·9133	24	0·9414	15	0·9749	6
0·8929	32	0·9162	23	0·9449	14	0·9790	5
0·8953	31	0·9191	22	0·9484	13	0·9831	4
0·8976	30	0·9221	21	0·9520	12	0·9873	3
0·9001	29	0·9251	20	0·9556	11	0·9915	2
0·9026	28	0·9283	19	0·9593	10	0·9959	1

(*To be continued.*)

Stockport.—The annual meeting of the above society was held on the 27th ult. to receive Treasurer's report, and also the result of ballot for Council for ensuing year. The report showed a substantial balance in hand. The following are the members of the Council:—Mr. J. Kay, J.P., President; Col. Turner, J.P., Alderman Harrison, Mr. W. B. Leigh, Vice-Presidents. Council: Messrs. Oliver Coppock, H. N. Cooper, G. H. Broome, B. S. Harlow, L. Hyde, H. J. Robinson, Geo. Hidderley, W. T. Scott, E. F. Ward, A. M. Gourley. Hon. Treasurer, T. Bedford. Hon. Secretary, T. Gould (104, Chestergate, Stockport).

Experiments with Magnesium Light.—On the 25th ult. at the establishment of Messrs. F. K. Hurman and Co., of St. Nicholas Buildings, Newcastle, there was an attractive demonstration to all who have an interest in the world of photography especially. Before a numerous company of representative photographic men in the North of England, Mr. Geo. W. Morgan, of Aberdeen, gave a practical illustration of an invention of his for taking photographs after dark by means of the magnesium light. There is nothing to be afraid of in the magnesium machine which Mr. Morgan uses. There is no prolonged glare to strain the eyes, and no noise to distract the attention. The apparatus is an exceedingly simple one. There is a light wooden framework, to which is attached a lamp. The "sitter" for photography being seated, this framework is moved by a system of cords, gradually across, between the lens and the "subject," a brilliant light being thrown gradually over, adjusting shadows and light as it passes. The process is only momentary, and the glare, or in this instance supposed glare, from the strong light is over and passed by before the sitter realises what has happened. There is none of the prolonged terrible light as under the electric light, which process has always been one of the difficulties of artificial illumination applied to photography. Another great feature of the instrument which Mr. Morgan brings from Aberdeen is that all smoke, and anything of an atmospheric detriorating quality is removed, rendering the air of the room as clear as possible, and not in the least detracting from the subjects under the camera. Another great feature, which was as fully demonstrated as possible, was the power of manipulating the light to secure various given effects, one of which was, as already stated, the smoothing down of strong light and shadow. The "focussing," it may be added, is made by the ordinary light of the room in which the "subject" sits, and the act of taking the photograph is merely as a passing gleam of light.

[1] As is known, the solubility of bromide of potassium in a mixture of alcohol and ether is so small, 1 : 1,200, that this salt is not useable in collodion; which the author pointed out in *Photo. Corresp.*, 1876, vol. 13, p. 92. This fact may have caused a prejudice of photographers against bromide of potassium, which with the use of watery solutions is quite uncalled for.

[2] *Bull. de l'Assoc. Belge Photo.*, 1881, vol. 9, p. 134.

[3] *Brit. Journ. of Photo.*, 1883, p. 203.

[4] *Photo. News*, 1883, p. 122.

[5] *Bull. Assoc. Belge de Phot.*, 1884, p. 271.

[6] *Chemiker Zeitung*, 1882, p. 1 319.;

[7] *Photo. News*, 1884, pp. 337, 350.]

Lantern-Slide Making.

By R. Child Bayley.

(*Concluded from page* 236.)

IV.

LANTERN SLIDES BY THE CARBON PROCESS.

Hitherto all the processes we have considered have been based upon the sensitiveness to light of either bromide, chloride, or iodide of silver with collodion or gelatine; but we now come to a method which depends upon an entirely different reaction. What is called the carbon process is based upon an observation made by Mungo Ponton as long ago as 1839, that certain organic bodies, in contact with potassium bichromate, underwent a change on exposure to light. For example, gelatine which has been treated with a soluble bichromate and exposed to light, becomes insoluble even in hot water. If a gelatine film treated with bichromate be exposed behind a negative, that part of the film which is behind the more transparent portions of the negative will become insoluble; that which by reason of the opacity of the negative cannot be acted upon by the light will, on the other hand, retain its solubility. The action proceeds in proportion to the amount of light passing through the different parts of the negative, the film after exposure being composed of soluble gelatine representing the high lights, and insoluble the shadows. If, with certain precautions, such a film be immersed in hot water, it is possible to wash away the soluble portion and to leave the picture composed of a varying thickness of gelatine which refuses to dissolve. If with the gelatine a pigment had been incorporated the result would be a picture in monochrome, the shadows being of the colour of the pigment employed, and the very highest lights formed by the paper or other substance used to support the film. Such, in a very diagrammatic manner, is the carbon process; and its great advantages will be sufficiently obvious when we point out what a large number of pigments, giving a vast range of tones, can be employed, and what opportunities it gives for the selection of colouring matters distinguished for their permanence.

Papers coated with gelatine with which suitable colouring matter has been incorporated are upon the market, and those within a day's post of London can be supplied with the tissue, as such paper is called, ready sensitised by immersion in a solution of bichromate. For prints of larger sizes such is the best way to obtain it, but for lantern-slide work it is preferable to sensitise it oneself. What is known as "transparency tissue" should be employed, as it contains a greater proportion of pigment, although under certain circumstances the other tissues can be used, and a convenient size for all operations before printing is 6½ by 6½ in. It is very advantageous to dry the tissue after sensitising face downwards on glass, and for this purpose a number of glass plates a little bigger than the tissue should be carefully cleaned, dusted over with French chalk, and the latter well rubbed in. A solution of potassium bichromate, one ounce to the pint, should be prepared, to which the addition of a drop or so of strong ammonia is sometimes useful. Into this solution the tissue must be placed, care being taken to avoid air bubbles, and left for from two to three minutes until it is quite flaccid. It can then be taken out and laid face downwards on a sheet of "talced" glass, covered with a piece of rubber sheeting and well squeegeed down. If this is done over-night and the tissue left in a warm room, it should be dry and ready for use in the morning. All the operations up to the drying of the tissue can be conducted in daylight; when in a wet state it is not at all sensitive. By drying in contact with glass a fine surface is given to the tissue, which helps to bring it into closer contact with the negative during printing, and as it may be left in contact with the glass until required for use, it affords a very satisfactory method of keeping it free from dust and with its surface out of contact with the atmosphere. For lantern-slides by this process the negatives must be very vigorous, a thin, weak negative which yields a delicate print on gelatino-chloride paper being quite unsuitable. Before printing they must be provided with a safe edge. This is done by painting out or using a mask, so that for an eighth of an inch all round the tissue shall not have been acted upon by light. The mask or opaque paint must be put on the gelatine side of the negative, while on the glass side another mask should be painted on a trifle smaller than the first. The effect of this double safe edge is to give the tissue a greater hold upon the glass to which it is to be transferred. The time required to print must be found by experience, an actinometer being used so that correct exposures can be given when once the proper time has been ascertained. Fuller details of the process are given in most handbooks, so that it is only necessary to lay stress upon those points in which the process for lantern slides differs from that for ordinary carbon prints.

When the printing is finished the tissue must be placed for a short time in cold water, until it has got rather soft. The duration of this soaking is a most important point; if it is not long enough, or if too long, the tissue will not adhere properly, if at all, to the glass upon which it is developed. When it has absorbed the proper amount of water it must be taken out, laid face downwards, and squeegeed down upon a clean piece of glass, 3¼ by 3¼ in. in size, and the glass with the tissue upon it placed on one side for a short time. The gelatine goes on absorbing water, and abstracting that which was between its surface and that of the glass plate causes those two surfaces to adhere firmly together. This will take place in a few minutes, after the expiration of which the plate is immersed in water, not boiling, but as hot as the hands can bear. In a few moments a slimy black substance will be noticed oozing out at the edges, and when this is the case it will be found easy to raise one corner of the paper which forms the back of the tissue and to strip it off, leaving the gelatine film upon the glass. Warm water must then be poured over the plate until that part of the tissue which was underneath the mask, and which has in consequence received no exposure, is entirely washed away, and the plate consequently has a clear glass edge. When this is the case the surface of the picture should be gently rubbed with a tuft of cotton wool, and the plate stood up to dry out of the dust. When thoroughly dry they may be mounted in the usual way; it is a good plan, not for slides by this process only, but for any made with gelatine, to heat the slide in a hot oven for a short time before mounting, so as to ensure it being thoroughly dry.

The Congress of the Photographic Society of Great Britain.

On the 10th inst. the first congress of the parent society was opened by Captain Abney, at three p.m., at Pall Mall, and the medals awarded to the various exhibitors were presented to those who attended. Captain Abney then read his annual address, and drew analogies between the congress, the convention, and the conference. The Salon was stated to be but a natural outcome of the advances made, and possibly neither would do the other harm. In referring to the affiliation the President said that they must be careful that the dog wagged the tail and not the tail the dog. Some difficulties had been encountered in obtaining the new premises, and, if necessary, they would have to consider the question of forming a limited liability company.

In reply to the vote of thanks, Captain Abney hinted very strongly that he would retire at the close of the year from the Presidential chair. Mr. Marsball Ward's paper was unfortunately postponed on account of illness.

On Wednesday, 11th inst., the Congress was resumed at the Society of Arts, at three p.m., when a paper, "The Astigmatism remaining in some Anastigmats," by Emil von Hoegh, was read in his absence by the Hon. Secretary. Practically the paper gave the result of some tests between the Zeiss anastigmats and Goerz's double anastigmats. On this paper there was no discussion.

Mr. Andrew Pringle then gave a summary of the present position of photo-micrography, and referred to the various types of the instruments used, and showed results of his own and other people's working. The discussion was continued by Dr. Bousfield, Ives, and Freshwater.

The next paper was read by Mr. Warnerke, "On a Photo-mechanical Process of Printing in Colours" by Weissenberger, which we shall print at an early date. Mr. Ives stated that the process was merely what he had used in 1881. Mr. E. J. Wall showed some collotypes in colours, and stated that the author's process was not commercial and a retrograde step, as stopping out was resorted to; and Mr. Warnerke, in reply, sat on both speakers by saying it was not intended to be commercial, but was merely a scientific experiment.

To a rapidly emptying room Mr. H. Maclean read a paper on "Photography in Compartments," which was a plea for the restitution of classes. This paper was adorned with some curious sentences, the most striking of which is the following: "And are not camerists merely specialised anthropomorphous simians, who, according to Kipling, have 'cut off their beautiful tails'?" Probably few will quarrel with Mr. Maclean for calling himself an anthropomorphous simian; whether they will consider themselves in the same category is another question altogether.

In the evening Lumiere's photographs in natural colours, by Lippmann's process, were thrown on the screen by the aid of the reflection of an electric lantern, and very beautiful they are, and mark a distinct advance, the time of exposure being reduced to four minutes, and the colours being exceptionally good and brilliant. This was followed by a paper on the Solar Eclipse by Captain Hills.

On Thursday afternoon, 12th inst., a valuable paper "On a System of Measuring and Numbering the Stops of Photographic

Lenses," by Dr. Rudolph, and another on "The Practical Testing of Photographic Objectives," by Dr. Miethe, were read by the Hon. Secretary. These we shall print in full shortly.

Then Mr. Debenham gave a demonstration on collotype printing, and described the grinding of plates with flour emery, the coating with a subsstratum of sodium silicate 1 oz., "four ale" 15 oz. After filtering through nainsook, the plates should then be dried, kept for one day, washed in water and dried, and then coated with a solution of

Potassium bichromate	30 gr.
Ammonium	30 „
Gelatine	1 oz.
Water	15 „

to which is finally added 40 m. of 1 : 24 solution of chrome alum. The plate is then dried in a perfectly level position at 130° F. For printing, the mask should be placed between the negative and plate glass, and the duration of printing is about that required to get two silver prints from a negative of the same density. The plate was then washed and inked and printed from.

In the evening there was a special show of lantern-slides by affiliated societies, some being good and some decidedly poor. There was a big crowd, conspicuous amongst it being two small boys, who clapped everything, good and bad, indiscriminately.

Croydon (Micro.).—Ordinary meeting, 5th inst., Mr. K. McKean chairman. Mr. J. H. Baldock read a short paper on the treatment of Nikko paper, and demonstrated the process of development with ferrous-oxalate, Thomas' hydroquinone, amidol and metol, the latter giving softer blacks than the two former. The cold tone could be modified by uranium toning, which took place much slower than with ordinary bromide paper. Mr. Sparrow then gave an account of his experiences with mezzotype, a rough silver paper, and brought a number of prints showing the variety of tones obtainable.

The Last Solar Eclipse.—Count-de-la-Baume Pluvinel, in a recent number of the *Comptes Rendus*, describes the instruments used by a small party which he sent to observe the eclipse of last April at Joal (Senegal), and reports the principal results. His photographic apparatus consisted of no less than *nine* cameras, with lenses ranging in diameter from six and a half inches to about one-fourth of an inch, but all having the same focal length, which was about sixty inches. They were mounted as a single instrument, under the charge of one man, who uncovered all the lenses simultaneously at the beginning of totality, and covered them after an exposure of 3′ 50″, just before its close. The nine pictures thus obtained were of course all of the same size, but of very different intensity; the best were those produced by a lens of about an inch in diameter. The structure of the corona in this eclipse is described as peculiar "in being nearly symmetrical, not around the sun's axis, as is usually the case, but with reference to a line in the plane of the sun's equator." The corona, in 1882, presented the same peculiarity, though not so strongly. M. Pluvinel is emphatic in the assertion that the structural form of the corona did not agree with the theoretical predictions of either Schaeberle or Bigelow. Two photographic spectroscopes were used both of which were exposed, like the cameras, during the entire totality. One of them, an instrument of high dispersion, gave no useful result; the other, of low dispersion, with an isochromatic plate, was splendidly successful; and besides the usual bright lines of hydrogen, the H and K lines, the D_3 line and the well-known "1474," it showed seven of the ultra-violet series of hydrogen lines. Moreover, in the region between H and F, it brought out a feeble continuous spectrum, upon which appear many of the principal *dark* lines of Fraunhofer, thus clearly indicating that the light of the corona contain, in addition to its own intrinsic "luminescence," a notable amount of merely reflected sunlight. The presence of dark lines in the spectrum of the corona has been before reported, more or less authoritatively, on several occasions; but this is the first instance of a photographic record, and puts the fact beyond question. Janssen, in a note which appears in the next succeeding number of the *Comptes Rendus*, dwells exultantly upon this observation as an irrefragable confirmation of his "theory of the coronal atmosphere," first announced by him in 1871 as the outcome of his eclipse observations at Sholoor in India. So it is; but his remarks constitute a characteristic example of the usual Gallic "ignoration" of previous work done by observers of another nationality. The theory of a "coronal atmosphere" was demonstrated and duly promulgated by American astronomers in connection with the eclipses of 1869 and 1870. Observations of the "actinic intensity" of the light of the corona were also made at Joal by an elaborate photographic apparatus; but on account of the haze and light clouds which vitiated the conditions of observation, the results are of little value.—*Ex.*

Our Annual Lantern Slide Competition.

NOTES ON THE UNSUCCESSFUL SLIDES.

CLASS I.

WALKER, W.—Every slide far too weak and thin, and one or two have a faint yellow tinge.

STABB, J.—These are very good slides technically, with just a slight tendency to harshness. Ran hard for a place.

APPLEBY, J.—These slides are just a trifle too black and heavy in tone. A rather warmer tint would have given more transparency in the shadows.

POST, W. B.—Slides of good technical quality, but one or two wanting in artistic merit.

BEAZLEY, MRS. G.—There is a tendency to harshness, and one or two are far too heavy in the shadows.

CLASS II.

PEARSON, J.—Good slides handicapped by harshness and a bilious greenery-brownery tone.

CLAGUE, H. J.—Almost every slide could be considerably improved by clouds.

WEBLING, A. H.—Some very fine soft slides which ran very hard for recognition.

NINNES, G. J.—Very poor slides indeed. This competitor should take the earliest opportunity of comparing his slides with some good workers', and he will learn more that way than from a page of our notes.

POST, W. B.—Just a weakness and want of brilliancy about these slides.

COULTHURST, S. L.—Good work, and very close to the winners.

CARRUTHERS, G. A.—A great unevenness of tone and quality. Nos. 4 and 6 a long way the best.

CLASS III.

GETHEN, C. E.—Good slides, but rather wanting in artistic qualities.

ATKINS, RINGROSE.—Five very good slides, badly handicapped by one which shows unequal patches of toning.

CLASS IV.

STABB, J.; BURTON, F. W.; COULTHURST, S. L.; ATKINS, RINGROSE; FARMER, H. E.; SELBY, H.—The competition in this class was exceedingly keen and close, and the slides had to be put through the lantern four times before the final result was known. There is not a bad slide sent in.

CLASS V.

STIEGLITZ, A.—Pure snap-shot work, and most of it wanting in artistic merit.

STABB, J.—Nearly every one too harsh, too black and white.

GETHEN, C.—Nearly every one too brilliant. A longer exposure and more careful development would have improved them.

CHILCOTT, G. E.—This is the competitor who sent in his slides with the expectation of getting some fun. Well, they are very poor slides to get fun out of and were thrown out by judges in first round.

BROOKER, A.—Good work, but one or two slides are practically identical.

HARDING, G.—Very uneven in quality and tone.

CHAMPION CLASS.

COBB, CYRIL S., and DRESSER, A. R., sent in sets; both good, but Mr. Dresser's by no means up to his usual standard.

Shropshire (Camera Club).—The annual meeting was held on 10th; there was a very good attendance. The balance-sheet was very satisfactory. The following officers were elected: President, Mr. F. W. Williams; Vice-Presidents, Messrs. Martin J. Harding, W. W. Naunton, G. Bidlake, and A. S. Buddicom; Hon. Treasurer, Mr. W. Benson; Hon. Secretary, Mr. Wallace Heath; Council, Messrs. W. Allfree, Bowdler, J. L. Della Porta, R. J. Irwin, W. G. Preece, John Pyefinch. The recommendation of the council to take permanent rooms for the use of club was adopted with acclamation. The room is a good size for meetings, and will always be open as a reading-room. It is hoped to form a good library, Mr. A. W. Gottlieb having given a donation and photographic books for this purpose. There will also be a dark-room for members. At the close of the meeting the prize prints in the recent "Photography at Home" competition were handed round and much admired. A good series of meetings is being arranged for the winter session.

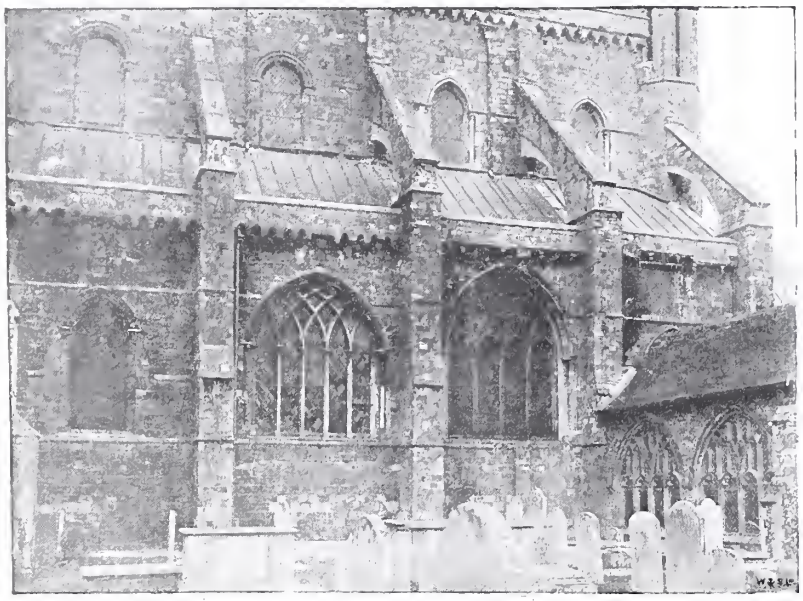
Holiday Resorts and Photographic Haunts.

THE WEST SUSSEX QUADRILATERAL.

BY THE EDITOR.

BOSHAM AND BARNHAM.

BOSHAM is the next station to Chichester on the road to Portsmouth. Like many other stations, it is a long way from Bosham proper. A dusty road for about a mile, and then to the right leads us to the village, for that is all that Bosham can lay claim to be. A clear little stream runs down one side of the road, and disappears by some farm-houses, where we found a lady artist laboriously transferring to canvass what takes us but a moment to obtain on our plate. Then passing a hideously ugly chapel, which obviously belongs to some Nonconformist body, for it certainly conforms to absolutely no order of architecture, a little further and we reach the church, which is exceptionally rich in interest for the architectural student—a Norman tower, surmounted by a shingle spire; a fine eastern Norman arch with characteristic bases to the columns; in the chancel the remains of an apse, for it is said that this church was originally an old basilica; an old altar tomb; a double piscina and sedilla. On the right hand of the nave is a crypt, which is about 4 ft. above the floor of the church, with a piscina in one corner. In the crypt itself some very fine groined vaulting is seen, and cheek by jowl with some old Norman fragments the crude daubings of an artist. Just outside the crypt door, which is inside the church, is an old crusader's tomb; the side aisles and the windows are evidently of much later date than the tower, and there are no less than five piscinæ in the church. Let into the floor close by the entrance to the chancel is a yellow tile with a black raven on it, and this is said to mark the grave of Canute's daughter.



"IN PARADISE." [See page 212.

Outside we find innumerable artists at work, for Bosham is a noted hunting-ground for them, and many are the pictures to be made here. Bosham is on a creek of Chichester Harbour, and at low tide, a stranded hulk, some boats with clambering urchins, or others with bare legs and feet, chasing the harmless little crab or sailing toy yachts, give plenty of scope for the peashooter as well as the stand-camera man, and the old red-brick and red-tiled houses with the trees and slender shingle spire of the church make up a capital background. There are two pictures in the Salon, by Karl Greger, of Bosham, but we do not like his treatment of it at all; we had to read the title before we recognised the place. We should like to have a week at Bosham, with fine weather and plenty of plates, so many are the pictures to be made, but we have to leave, for this is our last day out, and we have yet to do Barnham.

Barnham presents one or two pictures on leaving the station, and turning to the right and going under the railway bridge is seen a smithy which presents an opportunity for one picture at least, provided the accessories be arranged. Then on leaving the smithy on our left, we come to the church, which is not strikingly handsome, but on the north side will be traced in the outside wall the round arches of what has evidently been a larger church. The best picture of the church with its little wooden dovecote tower and background of fine elms is to be obtained after 2 p.m. from the south side, rather a short-focus lens being required.

This little village is particularly interesting to me, however, from the fact that here my companion, Mr. Marshall, has his country house, a pretty little cottage built to his own designs, and surrounded by a charming garden; and here many a pleasant twilight hour was spent discussing past and future work, or the Irish question, under the soothing influence of tobacco, or else getting a terrible thrashing at Halma from Mrs. Marshall. How much I am indebted both to Mr. and Mrs. Marshall I cannot express, but my '93 holiday will long be marked with a red letter in my memory, as the pleasantest I have spent for many years. To the L. B. and S. C. R. for all the facilities they placed in my way I am also indebted, as, except for their material help, I should not have been able to cover as much ground as I did.

Certainly the West Sussex Quadrilateral is an intensely rich field for photographic delvers, and I can strongly recommend it either for a special day's outing or for a more extended visit. There is a good train service from town, the living is not expensive, the air is good, and peace and quietness may always be had at will.

CONCLUSION OF MR. MARSHALL'S SHORT NOTE ON BOXGROVE.

Boxgrove Priory Church.—The Growth in the Early English or Lancet Period during the First Quarter of the Thirteenth Century.—Resuming our old stand-point under the tower. One of the most beautiful specimens of the work of this period in England extends before us. We are tied to matter of fact notes, and description is not possible.

This choir was doubtless the work of successive priors, and its erection extended over many years. No time is left us for interesting speculation, but we would have you note the plain cylindrical and octagonal piers of the west half of the choir, and compare them with the elegant clustered and detached columns of the Eastern half. Have you seen elsewhere a more exquisitely proportioned lancet window than that in the East end?

Growth in the Decorated Period, during the First Half of the Fourteenth Century.—The inserted windows in the aisles at the east end of the choir, some of the tombs, and the Priory Refectory to the north of the church.

Growth in the Perpendicular Period, during the Fifteenth and Sixteenth Centuries.—The vestry, possibly the screen forming the lower part of the west wall, the inserted windows in the transept, the Delawarre Chapel.

Special Points of Interest.—The window in the north wall of the north transept, one side at right angles to the window, the other side splayed. Look at this north wall from the outside; the priory evidently joined the church. Note the stones at the bottom of the window. It is evident the window is a hagioscope through which the altar of St. Mary and St. Blaze, in the south transept, could be seen by the monks as they knelt on the once projecting stones. The splay enabled them to see the Rood on the Rood Loft between the columns at the entry to the choir. Note the door above the window, the door of a staircase to the church.

The Two Churches under one Roof.—Stand before the west end of the present church and notice the lower partition wall. In this there are two bricked-up doorways. Examine the outside of this wall and note the piscina, and the small tabernacle, a recess in which the pyx was placed. Evidently an altar stood here, and we have thus a church on each side of the partition.

Records testify to a Parish Church and a Priory Church, but we cannot discuss this question as to which was which.

Note specially the Delaware tomb, "the powr chappelle," on account of which his lordship earnestly pleaded with Cromwell to spare the Priory. The upright shafts of the tomb are ornamented with low relief, and well repay examination. This tomb was once glazed and formed the family pew for Goodwood House. The brass to "Our Benefactress" in the south aisle is a grateful recognition of the repurchase of the tithes for the Boxgrove rector

Alas that other parishes whose tithes had contributed to the Abbey revenues have not had benefactors! To one parish, Barnham, but £10 per annum is paid by the owner of the tithes (who is a layman) out of the £400 tithes he receives. Please do not blame the Church for this, but the great Church robbers.

IN WILDEST WALES.

By W. Raisbeck Sharer.

It may seem rather late in the season to write anything about North Wales, and perhaps for the ordinary tourist it is, but so far as the amateur photographer who is also an artist is concerned, September and the early half of October yield the finest atmospheric effects in the mountain altitudes. Mountain and mist effect photography may be looked upon almost as a special branch, inasmuch as one must be a reasonably good mountaineer as well as a passable photographer in order to gain the much-to-be-desired results.

With a reasonably good book, such as the "Gossipping Guide," and a sound pair of legs, one may without previous experience venture, in fine weather, to climb from near Llanberis, Moel Eilio, Y Garn, or Elidyr Fawr, but some degree of expertness and power of endurance should be acquired before dragging a camera to the top of the Glyders, Tryfau, or the more difficult outlying arretes of Snowdon. Crib Gorb must be regarded as among the practically impossible—without great danger—to any except those who are really experienced climbers. Snowdon itself is, by at least one of the ordinary routes, mere child's play, as there is a good path all the way up, and practically no climbing at all. One of my pictures is a mist effect, taken from the peak looking downwards to-wards Beddgelert.

The Glyders, Fawr, and especially Fach are queer place to drag a camera up; indeed, the wilder parts of the little Glyder require care even when the hands are free, especially in descending. You may fairly well get pretty high up the corner, where the rugged prominence of Castell y Gwynant stands, but you find it nervous work coming back.

Climbing down the side of Glydyr Fawr, and getting on to the shores of Llyn y Cwn (the Lake of the Dogs), which lies in the valley between Glydyr Fawr and Y Garn, you can, in a short time, by following the stream, get to the Devil's Kitchen, one of the most remarkable sights in Wales. But do not attempt *that* in misty weather, nor at any time try to walk down the Kitchen, unless you want to make a hurried visit to Cwm Idwal, hundreds of feet below, and to arrive there in a mangled condition.

This is but a fragmentary sketch suggesting what to many may be pastures new for the camera.

One often hears of holiday resorts being spoilt by the vandalism of Cockney tourists. For my part I think the vandalism referred to is often exaggerated by over-sensitive people, but, however that may be, one is not likely to be greatly troubled with it in the mountain fastnesses where there are no paths.

The worst pieces of vandalism I heard of in Wales were of Welsh extraction. An artist (!) is having a house built at Bettws-y-Coed in such a position as to block out the most beautiful view of Pont y Pair, which in the past has been one of the attractions of the place. Here is a view which, unless public spirit or the public purse prevents it, will be lost entirely in the course of a couple of months. Nant Mill, again—who has not heard of it, or seen its picture hanging year after year on the walls of London picture galleries?—Nant Mill will soon be no more if something is not done, for a Welsh gentleman is about to pull it down and build a mansion on the spot. *O tempora, O mores!*

In conclusion, without attempting to instruct those who are probably vastly my superior in photographic experience, I would mention that for mountain work I use pyro-ammonia somewhat heavily restrained, and with the pyro greatly in excess. Otherwise the sky and distant hills will be coal-black before the foreground detail is up to printing density.

OLD MORETON HALL.

By T. M. Brook.

In the Doomsday Book mention is made of the Ville of Rode, at that time divided into the two manors of Moreton and Rode. The Earldom of Cheshire was granted by the Conqueror to Hugh Lupus, and he divided the lands between his followers. The Manor of Moreton was held by knight service, and gave its name to the family who held it. From the time of Henry III., the estate continued in strict male descent until the time of Sir William Moreton, Knight Recorder of London, who died without issue in 1763. One of the Moretons married the daughter of Sir A. Brereton, by whom he had with other issue, a son, William, born a year or so after the accession of Henry VIII. to the throne. He began the erection of this beautiful building on the site of an earlier building, and his son, John Moreton, who died about the end of Elizabeth's reign, completed it.

The North Staffordshire Railway does not cover a great amount of ground, but it passes through a most picturesque district, Moreton Hall being best approached by it. Leaving the train at Mowcop Station, a walk of a mile and a half through pleasant fields brings us to our destination. On the way glimpses of the old hall are seen through the trees to heighten the sense of our coming enjoyment. After passing an old barn and through a gate, old Moreton Hall is suddenly revealed in all its ancient beauty—a vision of olden times. It is like some fairy palace of the romantic days of old. For colour and broken outline it cannot be surpassed. A lofty gable of ornamental oak and plaster-work, and great windows overhanging the entrance gateway, which is of richly carved black oak; a flat-arched Gothic bridge spanning the silent waters of the moat, the only approach or entrance; the gables with carved pendants, the great chimney, and the whispering willow beyond the bridge complete a picture such as surely never was seen elsewhere. Passing over the bridge and through the entrance, the courtyard opens out to view—it is like another peep into fairyland. Entering, we are surrounded by fresh beauties. Nothing can exceed the wonderful effect of the north side; here the architect seems to have lavished all his powers, and has produced a marvel of strength combined with lightness and beauty. The windows are so many and large as to give an impression the building is all windows. Where there is no glass there is dark oak richly carved, or moulded into quatre-foils and other forms filled in with plaster. Two of the bays, two storeys high, are each formed of five sides of a decagon, differing in size and surmounted by gables. The upper windows overhang the lower, and the lead-work holding the glass is formed into various geometrical patterns.



A Mist on Snowdon.

The doorway leading into the banqueting hall is perhaps the most elaborate piece of work in the whole building—it is one mass of exquisite carving. The south side of the quadrangle is a complete contrast to the north, there being no windows at all on the ground floor.

Ascending the staircase in the southern building, we arrive at the ball-room. This is of great length in comparison to its width—71 ft. long by 12 ft. wide. The open timber work roof, rising to 17 ft., is very beautifully ornamented with oak and plaster quatrefoils. Oak timbers and iron bars have been placed across at a later period to act as tie-beams to prevent the thrust of the roof from pushing out the sides, which are now considerably out of the perpendicular. One end and the whole length of each side of the room is a continuous line of windows, the lead work and small panes of which are formed into a marvellous variety of patterns. On the south side is a small room projecting over the entrance gateway. This room, like the ball-room is panelled with old, oak, and has a highly ornamented fireplace bearing the heraldic shield of the Moretons quartering those of Macclesfield, and surmounted by the Moreton crest. On either side are large figures of Justice and Mercy.

Descending, and again passing over the bridge, we find that the hall, with its garden, occupies about an acre of ground, and is quite surrounded by a wide moat. It stands near the road from Congleton to Newcastle, on an undulating plain, in the south-east corner of Cheshire, about four miles from Congleton.

The best general views are from the south-east, west, and north-west. Outside the moat, at its south-west corner, is an artificial mound surmounted by a grand old sycamore tree.

To the World's Fair.

BY A LUNATIC WHO WENT THERE.

(*Continued from page* 211.)

Chicago.

THE driver with whom we made our trip at Niagara concluded it by wishing us long life, health, and happiness, presenting his card, and asking us to give him a word of recommendation if we should have any photographic friends journeying in the States. He will always attend to post-card appointments and provide carriage of any required size. We can honestly recommend him, so I give his name—Thomas C. Shannessy, hack driver, No. 42, Niagara Falls, N.Y.

We have now been here four days, and are delighted with the Exposition, and with the people, so far as we have met and known them. Smith has friends here who seem to know everybody, and through them we can have access to some of the home life of American people. We have spent two evenings with these friends and their friends, and have spent a whole long day with them seeing some of the sights of the city. We have visited, or are going to visit, many of the business and other institutions that are not "show-places," but to which we have been introduced through personal friends. This gives us a grand opportunity of really knowing some of the home and the business life, and I am sure the experience will be of the greatest possible value to us in speaking and thinking of American matters when we are at home again. It is a pity that all British travellers have not the same opportunity, and Americans travelling in England also lose much by only seeing the outside of the life of the people. But this is not photographic.

Keystone Express.

We have had nearly a fortnight in Chicago, and are now running homeward over what I suppose is in many respects the finest railroad in the world—the Pennsylvania road. It is a slightly longer run than the one made by the Exposition Flyer, but it carries us through so much interesting and beautiful country that if I could only make the journey one way, I should certainly choose this route. Some of its scenery has been made familiar to English people by the very fine photographs of Mr. W. H. Rau, which are to be seen in so many of the excursion ticket offices, and which have been shown at some of our photographic exhibitions, as well as at the Society of Arts rooms and the Polytechnic. The Horse-shoe Curve, the Pack-saddle, and the views on the Blue Juniata are all from the section of road over which we have just travelled, and though the photographs are very beautiful they can give no idea of the real beauty of the scenes. Never have I longed for greater photographic scope as I have during this trip, and never have I felt the need of photography in colours as I have done during the last few hours and especially since reaching the beautiful river scenes through which the Pennsylvania road runs at the foot of the eastern slope of the Alleghenies. Of interesting though not beautiful places I need only mention Pittsburgh, with its natural oil-wells; Johnstown, swept away only a few years ago in the most destructive flood ever known in America; and Harrisburg, the capital of Pennsylvania. Before coming to Johnstown we ran for many miles along the Conemaugh river, a river very picturesque in places. Some of the stern-wheel steamers, real southern craft, tempted us very much to stay over for a later train in order that we might get a few shots at them. Shaunessy and Smith both used several plates snapping at these curious vessels, but as the train was in motion as well as the boats I do not think their results will be much good, unless in the case of one or two distant steamers, which may have given small images sharp enough for enlarging. Along this line we could pleasantly spend a few days or weeks. There are so many varieties of country, so many curiosities in people and things, and so many charming scenes, that we feel it almost a sin to fly past them as we are doing.

At Johnstown an "observation car" was added to the train, and the conductors advised the passengers of the fact. In winter the observation cars are very fine constructions (I don't know whether they are used on this particular section), but the summer cars are plain and simple in the extreme. A flat truck, with a roof supported on thin pillars, a hand-rail round to prevent folks falling overboard, and two rows of green-painted armchairs. There are no windows, so that a grateful breeze is felt, and the view on both sides and behind is quite uninterrupted. In this car we sat enjoying the prospect as the train wound up and up the valley from Johnstown, over a section of road that was utterly swept away by the great flood which took rails, sleepers, embankments, trains, and buildings in its wild rush. Some of the passengers wondered "How would it be if such a flood were to meet us now?" It certainly would be the end of all of us, but as we wanted some snap-shots we did not worry about floods. Up and up runs the line, and at every mile the hills are rising higher and the valleys descending deeper. Now we swing round a headland, and again back into a deep bay, and as the line is sloped accordingly, we are now looking at the hill-tops, and now at the vales below. In places the grouping of the trees is very picturesque, and we specially noticed the giant pines or cedars standing high and black above the other trees, many of them dead ("winter-struck" the Americans called it), but still standing, with their bare brown trunks and stiff leafless arms looking very images of desolation. On the whole, however, as the scenery is on a large scale, the trees are distant and blend into a compact, unbroken mass. They remind one of the Devonshire coombes, where the young oaks are grown and never allowed to become more than saplings. This evenness of the trees is a disadvantage from the photographic point of view, making much of the scenery which is really grand look small and tame in a photograph. At times, as we wound along, valleys running into the one we were following would give a glimpse of far-away mountains, lost, almost, in the haze of distance. At times we passed a little station, picturesquely placed, and serving some little nestling township. At Cresson we reached the highest point of the line, and soon afterwards passed the celebrated Horse Shoe. It is a most effective curve, a very perfect horse-shoe, and very well surrounded. Just at the "toe" of the "shoe" from which the well-known view is taken, is a tiny station, and on the grassy slope is a large horse-shoe-shaped flower-bed. We wished we could have stayed here awhile, and thought that a fine view of the curve could be taken from the last point from which we saw it. But our train is a flyer, and we have no time to spare.

Off "the Banks" again.

Once more we are afloat, after an all too short experience of a wonderful country, a most friendly and hospitable people. Once more we are in the Newfoundland haze, and I have a chance to fill up my somewhat disjointed log.

The Keystone express brought us to Philadelphia, the Quaker city, sometimes called the City of Homes, because the building society principle has enabled a very large proportion of Philadelphia's workers to own their houses. It has a larger number of house owners in proportion to population than any city in America. And all the houses are self-contained, none of the "flat" system. We were fortunate—exceedingly fortunate—in having introductions to Mr. John Carbutt, the well-known plate and film maker. His home, Wayne Junction, is only a few miles from Philadelphia, and though he is an Englishman by birth, he seems to know almost everybody in Philadelphia, and the day spent with him was one of the busiest days of sight-seeing I ever remember. He introduced us to the studios of Mr. W. H. Rau, where we enjoyed looking over some wonderful railway and naval photographs, and of Mr. F. Gutekunst, one of the oldest and most celebrated American professionals, both of which places we had a wish to see. As we were Britons, he also introduced us to Messrs. Williams, Brown and Earle, the agents of Messrs. R. and J. Beck; and to Mr. W. P. Buchanan, agent of Messrs. Percy Lund and Co. Philadelphia competes keenly with New York in the photographic material business, and imports largely from Europe.

We saw the rooms of the Photographic Society of Philadelphia, and I wish our British societies only had such rooms. The principal one is a large, handsome meeting room, all panelled in wood; and off it is an enlarging-room, and a dark-room with six stalls, very well fitted up. It must be a pleasure to work in such rooms, and it almost made me weep to think of my own somewhat stuffy "black hole" under the stairs, where the water is brought by a rubber tube from the bath-room tap, and taken away in buckets. The reading-room of the Philadelphia Club is handsome, well-lighted, and comfortably furnished, and supplied with (amongst other things) several portfolios of photographic studies that are a treat to examine. The cloak-room and lavatory accommodation is ample, and even sumptuous, and I should not wonder if the members of such a club were often tempted to stay late at nights, even at the risk of curtain lectures on returning home.

We went to almost all the show-places, including Independence Hall; went out along one of the tramways to admire suburban Philadelphia; and spent nearly an hour at the fairs and on the ferry-boats, which gave us excellent opportunities of snap-shooting, especially as there was one of the U.S. battle-ships of "the white squadron" lying picturesquely posed amongst smaller and more peaceful craft. And after all this work we were able to run out to Wayne Junction with Mr. Carbutt, to see a few pictures and transparencies at his factory, taking a later train forward to New York. Philadelphia has a larger proportion of Britons in its population than any city in the States. It is a very interesting city, and anyone who wishes to see it thoroughly should ask Mr. Carbutt or Dr. Mitchell, or Mr. Redfield, of the Society, for an itinerary. But he should take at least three days to it; not one, as we did.

(*To be concluded.*)

Reviews.

Negative Making. By Captain W. de W. Abney. Published by Piper and Carter, 5, Furnival Street, Holborn, E.C. Price 1s.

The second edition of the above little manual, now brought up to date, is to hand. It has long been one of the standard works for the beginner, and, written in a clear and lucid manner, is by no means difficult of assimilation.

Pictorial Effect in Photography. By H. P. Robinson. Published by Piper and Carter, 5, Furnival Street, Holborn, E.C.

Mr. Robinson's work has for so long been one of our accepted and honoured treatises on art that it seems unnecessary to do more than chronicle the appearance of this the fourth edition. To the main body of the work are now added some essays, treating more particularly of particular subjects, and these written in the author's well-known style add to the value of the book.

The Ilford Year Book. Published by the Britannia Works Company. Price 1s.

The issue of this the second of the Ilford Year-Books reminds us very forcibly that 1894 is very close. Like the last one, it is a diary with a register for exposures, but this year it is differently bound with a pocket and pencil. We have found this year's exceedingly useful, and doubtless '94 will prove equally so.

Exhibitions.

Society.	Entries close.	Opens.	Closes.	Address of Secretary.
P. S. G. B.	Sept. 13	Sept. 25	Nov. 15	R. Child-Bayley, 50, Gt. Russell St., W.C.
Hamburg	—	Oct. 1	Oct. 31	Das Ausstellungs Committe, 33, Schwanenwik, Hamburg.
Photographic Salon	Sept. 27	Oct. 9	Nov. 11	Sec., 215, Shaftesbury Avenue, W.C.
East London	Oct. 23	—	—	W. R. Gould, 61, Gibraltar Walk, E.
Hackney	Sept. 30	Oct. 17	Oct. 19	W. Fenton Jones, 12, King Edward Road, N.E.
South London...	—	Nov. 7	Nov. 11	C. H. Oakden, 53, Melbourne Grove, Dulwich, S.E.
Leytonstone Camera Club ...	—	Nov. 20	Nov. 25	A.E. Bailey, Rose Bank, South-west Road, Leytonstone.
Stanley Club	Oct. 31	Nov 17	Nov. 25	W. D. Welford, 57 Chancery Lane, E.C.
Madras	—	Dec.	—	Hon. Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28, 1894	113, West 38th Street, New York.
Bristol	See p. vii	Dec. 18	Jan. 22, 1894.	F. Bligh Bond, 36, Corn Street, Bristol.

ENGLISH EXHIBITORS AT HAMBURG.

From a very long list of the prize winners at the Hamburg Exhibition, we extract the following names:—A. R. Dresser takes an oil-painting given by some lady as prize. Paul Lange takes an oil painting given by Freunde der Photographie; A. R. Dresser takes one of the prizes of the Amat. Phot. Verein for the same picture as wins the first mentioned. The following receive diplomas—Miss A. K. Brown (cf Norwich), Rev. Wm. Barlee (of Cringleford), Martin J. Harding, J. W. P. Norton, C. P. Smith, A. G. Segnitz. We believe the above were the sole exhibitors from England.

Liverpool (Camera Club).—This society held its annual smoking concert on 11th inst. The President (Mr. J. Hawkins) occupied the chair. A varied programme was gone through, Messrs. Russell, Freeman, and Ball singing several humorous songs, while Messrs. Pride, Fitzgerald, and Edwards contributed other items to the vocal portion of the programme. Messrs. Smith, Brown, Whitehead, and Freeman shared the honours of the instrumental portion, after which Mr. Tansley contributed parodies on L. C. C. topics of the year. Mr. Youdes acted as accompanist.

Societies' Notes.

The Woolwich Phot. Soc. open their winter session on 26th inst., and meetings are held second and fourth Thursdays in the winter. A good programme has been drawn up, and the Hon. Sec., J. Borthwick Panting, of 3, Friar's Villas, Old Charlton, will be glad to give further information or to hear from intending members.

The Stockport Phot. Soc. hold their annual exhibition this week, and it was opened on Monday, 16th inst., by the Mayor. Some excellent work is shown, and lantern-slide exhibitions are to be given every evening.

The Guildford Phot. Soc. have instituted a photographic survey for the county of Surrey, and Mr. A. E. Moon will be glad to have the co-operation of all Surrey photographers, whether members or not of a society. His address is 36, High Street, Guildford. We also note that the subscription to above society is now reduced to 5s. per annum.

Dr. Finny, Kenlis, Queen's Road, Kingston Hill, will be pleased to receive the names and addresses of any ladies or gentlemen who would like to form an amateur photographic society in Kingston-on-Thames. Rev. G. I. Swinnerton has kindly offered his help, and suggests the occasional use of his new iron school-room for headquarters. Notice of a meeting for the purpose of making arrangements will be posted to any one who is interested in the matter.

Societies' Meetings.

Ashton-under-Lyne.—On 11th inst. Mr. J. T. Lees gave a demonstration on lantern-slide making, Dr. Hamilton, the President, in the chair. Mr. Lees, before giving his demonstration, had thrown on the screen a number of slides, showing different faults in them, and pointing out where they could be improved. He also showed slides with clouds put on the cover glass, and then had the slide separated and showed the slide without cloud, thus showing the improvement by having a suitable cloud added to the slide. He then proceeded to expose and develop a number of plates on negatives provided by different members. He exposed six at once at different distances from the light, and after they were developed and fixed they were put into the lantern and thrown on the screen. He advised all new beginners to keep to one good brand of plates and one developer, and if they persevered they would in time become successful.

Gosport.—The annual meeting was held on the 11th inst. The Rev. L. J. Matthews, President, took the chair. The annual report was a highly satisfactory one, and spoke of the useful work that had been accomplished during the past year. The position of the society was regarded as thoroughly sound, and during the year the membership had considerably increased. Special demonstrations and excursions had been held on various occasions and were much appreciated. The society obtained two awards in last year's National Lantern-slide Competition; the result of this year's had not yet been promulgated. The Treasurer's report showed a small balance to be brought forward. It was explained that the heavy expenditure was caused through the purchase of apparatus, etc. The report and balance-sheet were unanimously adopted. Mr. R. E. Froude was elected President. The other officers elected were:—Vice-Presidents, Rev. L. J. Matthews, Mr. George Churcher, and Mr. T. E. Williams, R.N.; Council, Messrs. S. W. Furze-Morrish, H. Fisher, A. Fisher, E. Tucker, V. W. Misselbrook, and W. Moss; Hon. Treasurer, Mr. W. B. Smith; Hon. Secretary, Mr. Reginald E. Green, 8, Chapel Row, Portsea, Portsmouth. An attractive winter programme is in course of preparation, and amateurs wishing to join would do well to communicate at once with the Secretary, as the next meeting commences the new year.

Hackney.—On 11th inst. an entertainment was given by the Hon. Sec., Mr. W. Fenton-Jones, entitled, "My Italian Campaign; or, a trip from England to Italy by way of Paris, Marseilles, Rome, Nice, Geneva, Pisa, Florence, Venice, Naples," etc., which was illustrated by about 150 slides, put through the optical lantern under the management of the Society's lanternist, Mr. Albert Rose. Not withstanding the inclement weather, there was a numerous gathering of members and friends. The lecture was very instructive and interesting, and the slides, which were of excellent quality, were nearly all taken in a hand-camera, those of Venice, Rome, and Mount Vesuvius calling for special comment, these being excellent both as regards composition and finish. The variety of subjects which were shown proves what a decided advantage and great range of subjects a hand-camera can produce, for many pictures, such as those taken from the train along the route, would have been impossible to obtain with other than a hand-camera. A voluntary collection was

taken up on behalf of the Photographers' Benevolent Institution, which realised £1 13s. 9d.

Leicester.—The winter session was very successfully opened on Mr.12th inst., when a highly instructive lecture was delivered by the H. Cowdell, entitled "Snap-shots in the East," illustrated with seventy lantern slides depicting scenes, manners, and customs of the Eastern people, all taken from negatives obtained by Mr. Cowdell with a snap-shot camera on his journey to Constantinople, Athens, Smyrna, and the Levant. Before the lecture the usual formal business was transacted; nine members were proposed for ballot at next meeting and one elected.

Leeds (Camera Club).—This club, formed a few weeks ago, has already attained most satisfactory dimensions, and promises to become one of the popular and energetic societies in the provinces. At the last meeting, held on the 12th inst., seventeen new members were elected, and donations of club's album, question box, notice board, minute books, etc., were promised by various members. The meeting gave its approval to a capital syllabus, which includes lectures, demonstrations, lantern exhibitions, and musical evenings, drawn up by the Committee for the coming session, after which a very instructive paper on "Exposure" was read by Dr. Thresh, the President, which was followed by an interesting discussion thereon.

Leeds (Y.M.C.A.)—The annual meeting was held on 13th inst., when the election of officers for the coming session took place. Mr. T. R. Thompson and Mr. H. Eastwood were unanimously elected to the Presidential and Vice-Presidential chairs respectively. The following gentlemen were also elected as a Committee:—Messrs. J. A. Noble, Willey, Goddard, and Harrison. The two retiring Secretaries, Mr. H. Eastwood and Mr. J. Hazelip, tendered their resignations owing to the increasing number of calls on their time in other directions, and Mr. H. Ripley was elected to the vacant positions. An excellent syllabus of lectures and practical demonstrations was arranged for the winter months.

North London.—On the 3rd inst., Mr. Griffiths in the chair. At the last meeting the ever-recurring difficulty of getting even toning results on chloride was referred to by several members, and Mr. Bishop now gave a demonstration of his manipulation of the paper. He used the combined fixing and toning bath made according to the original formula given by the Eastman Company for use with their Solio paper. He found the No. 1 hypo solution improved by keeping. The gold solution should be shaken up before adding it to No. 1. The prints should be printed rather deeply from plucky negatives, and not washed before being put into the toning bath. The prints must be examined by transmitted light, and when the brown colour disappears the prints are removed to the washing water. Mr. Bishop toned about a dozen prints with good results, and the simplicity and rapidity of the manipulation was fully appreciated. He preferred drying the prints on ferrotype plates in preference to glass. The plates required no preparation and he never had any failures in consequence of the prints not coming off. If a matt-surface is required, opal was preferred to ground-glass for drying the prints on.

Putney.—The first meeting of the winter session was, by the courtesy of Mr. Poole, held at 116, Upper Richmond Road, on the 2nd inst. The Vice-President, Dr. W. J. Sheppard, in a short introductory address, briefly but lucidly reviewed the progress made in photography during the past year. Referring to the society, he said that both in numbers and work steady improvement had been made, and the remarkably good and enthusiastic meeting that evening showed plainly that there was a bright and prosperous future before it. He hoped the members would now shake off some of their modesty and compete at the open competitions this winter, as he believed their work certainly gave them a right to. The society would hold an exhibition in December, and he felt certain if the members would all compete, and send their best work, the show would be very successful. He had great pleasure in announcing the result of the summer competition in prints, the silver medal being won by Mr. Walter L. Colls, the bronze medal by Mr. H. Faulkner, and the certificate by Mr. W. Martin, jun. Three new members having been elected were welcomed by the Vice-President, who introduced them to the meeting. A committee was elected for drawing up rules and arranging the details of the proposed exhibition. During the evening some of the prints sent in for competition to the *Hand-Camera and Lantern Review*, kindly lent by the editor, were circulated among the members, giving them a good idea of the standard of excellence of competitive work. Mr. Zachariasen introduced a hand-camera designed by himself. After briefly stating some of the disadvantages connected with nearly every form of magazine cameras, and the preference shown by many workers for dark slides as being generally more reliable and suitable for good all-round work, he proceeded to describe his model. The only objections to the ordinary dark slides were, he thought, their bulk and weight, and, perhaps, more particularly the danger of stray light getting in when used in a hand-camera, which was also frequently carried about for a considerable time with the shutter of the slide drawn. To meet these objections he had constructed double dark slides, weighing 2¼ oz., and three-eighths of an inch thick; he was enabled to make this reduction in weight and thickness by the novel design adopted, in which the usual draw-out shutters and partitions between the plates were dispensed with. But what he attached still more importance to was that all parts of the dark slide would, except when changing, be placed and manipulated in a light-tight chamber, so that the chance of any plate being fogged was absolutely nil. The camera shown was externally very like the ordinary box form, measuring 5¾ in. wide by 4½ in. high; it was made to hold twelve dark slides, each containing two quarter plates. Proceeding to show the working, he opened a small lid at the back, inserted the slide in a groove, and shut the lid; when the slide is thus enclosed in the camera all that is required to make the exposure is to give a small lever, on the outside of the camera, a quarter of a turn. As this need only be done immediately before exposure, the sensitive surfaces are very efficiently protected against any dust which may find its way into the camera when travelling or carrying it about. A great safeguard against carelessness has been introduced here, as it was clearly demonstrated that it was quite impossible to withdraw the slide until it was securely closed. On examining the camera, it was seen that there was no delicate mechanism or springs to get out of order, and that the system was simplicity itself, merely consisting of inserting the slide and turning the lever. Mr. Zachariasen said he had thoroughly tested the camera during a five weeks' tour to Norway when about 150 films were exposed, without the faintest hitch or sign of fog on any one.

Richmond.—At the weekly meeting Mr. Zachariasen showed a hand-camera designed by him which, besides being light and compact, had some novel points. The plates are exposed in double dark-slides of a new form, which are about half the thickness of the usual kind, and one-third the weight. The slide is enclosed within a light-tight chamber in the camera, and the shutter of same opened from outside by means of a lever. Mr. S. H. Fry gave his lecture on "Lantern Slides with Gelatine Plates," his remarks being chiefly concerning the Paget printing-out plates. He considered that the essential characteristics of a good slide were great brilliancy combined with great purity of tone. The shadows should be quite transparent, and there should be some clear glass in the picture. The question of colour was a most vexed one. At first, slides made on gelatine were cold in tone, but the result of several years' experience with them had made it possible to obtain almost any colour. For reduction purposes a fairly rapid plate was desirable, but to obtain the finest deposit the printing-out plates were the best. True, they were slow, but not as much as some believed, while a good method of development greatly overcame that objection. They could be slightly printed-out and then developed, which he thought was the method giving the best results. He preferred a combined toning and fixing bath. It was essential to keep the bath either neutral or alkaline, hence he recommended the addition of a lump of chalk to it. To obtain warm tones on the ordinary lantern plates, the exposure should be increased considerably, and carbonate of ammonia added to the developer, as it acts as a restrainer and colour-giver.

The Lantern Society.—On 9th inst. the first meeting of the session. The Hon. Sec. announced the reduction of the subscription, and the accession of ten new members. Mr. C. S. Scott showed his new lantern-slide printing frame, an ingenious arrangement for printing slides by contact, and adapted for use with the new printing out lantern plates. The set of slides being sent to America by the Society were then shown on the screen. Members subsequently inspected the new lantern purchased by the Society, which is fitted with one of Mr. G. M. Nelson's double-crown condensers, the front lens of which, on being reversed, enables parallel rays to be obtained, and a 9 in. Wray projection lens. The performance of the lantern left nothing to be desired, both as regards definition and entire absence of colour in the image. The lantern is adapted for scientific work as well as for the ordinary work of showing slides.

Ulster Amateur Society and Belfast Y.M.C.A. Camera Club.—A combined meeting was held on 9th inst., the President, Mr. Wm. Swanston, F.G.S., occupying the chair. Mr. James Wilson, M.E., gave a paper on "Stereoscopic Photography," illustrating his remarks by describing and showing the camera used, the method of making slides or transparencies, and gave many hints regarding the subjects most suitable for this branch of work. A stereoscope was on view, containing fifty slides of Continental views taken by himself. Mr. Wm. Calvert afterwards gave an interesting account of a tour in Switzerland, illustrated by about sixty slides from negatives taken *en route*.

West London.—On 10th inst. annual general meeting. The annual report was presented, discussed, and adopted, and the meeting proceeded to appoint officers for the coming year. Mr. J. A. Hodges was re-elected President.

SOCIETIES' FIXTURES.

Oct. 19—ASTON.—"In and around Cheddar," Mr. B. Cracroft.
" 20—LEWISHAM CAMERA CLUB.—"Demonstration of Platinotype," Mr. W. H. Smith.
" 20—CROYDON MICROSCOPICAL AND NATURAL HISTORY CLUB.—Lantern Evening: Members' Slides.
" 20—LEEDS Y.M.C.A.—Demonstration on "Lantern Slides, and how to Make them," Mr. H. Eastwood.
" 21—LEYTONSTONE CAMERA CLUB.—Open Social Evening at Head-quarters, at 8 o'clock.
" 23—THE LANTERN SOCIETY.—Exhibition of Lantern Slides for Members and their Friends.
" 23—GOLDSMITHS' INSTITUTE CAMERA CLUB.—"Carbon Process," W. A. L. Spiller.
" 24—NORTH MIDDLESEX.—Members' Lantern Evening.
" 24—NEWCASTLE-ON-TYNE.—Annual Meeting: 1893 Prize Slides.
" 24—LOUGHBOROUGH.—Paget Prize Lantern Slides, Lecture and Demonstration by S. Herbert Fry.
" 24—HACKNEY.—Notice of Resolution given by Dr. Roland Smith.
" 24—P.S.G.B.—Technical Meeting at the Gallery, 5a, Pall Mall East.
" 24—SHROPSHIRE CAMERA CLUB.—Opening of New Club rooms.
Oct. 25—ASHTON-UNDER-LYNE.—Lantern Exhibition of Members' Slides. Each member to be limited to twenty slides.
" 25—LIVERPOOL CAMERA CLUB.—Ordinary Meeting. Exhibition of Members' Lantern Slides.
" 25—LEYTONSTONE CAMERA CLUB.—Demonstration on the Collodion Process.
" 25—WIDNES.—Open Night.
" 25—DUBLIN CAMERA CLUB.—Competition of Members Prints.
" 26—HULL.—Paget Prize Lantern Plates, etc., Demonstration by Mr. S. Herbert Fry.
" 26—LIVERPOOL.—Lantern Lecture, by Mr. A. W. Beel.
" 26—HARRINGAY AND FINSBURY PARK.—"Solio Printing," Eastman Company.
" 27—TOOTING CAMERA CLUB.—"Artistic Photography," Mr. Berger.
" 27—CROYDON MICROSCOPICAL AND NATURAL HISTORY CLUB.—Technical Evening. Suggestions for Mounting Prints, etc., to be exhibited at the coming Soiree.
" 28—LEYTONSTONE CAMERA CLUB.—Members' Lantern Evening. Members please bring slides.
" 28—HUDDERSFIELD.—Geological Exhibits, "The Geology of Huddersfield," by E. H. Bould, with Lantern Illustrations.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6166. **Outdoor Work.**—I find after two or three years' experience that I am much more successful in taking groups and portraits than with landscapes. As this seems to be against the ordinary experience, I should be glad to know if the lens could be the cause of this peculiarity. It is a Rapid Rectigraph. Could I perhaps do better by having a special one for landscape work, and continuing to use the one I have for groups and portraits?—MANSFIELD.

6167. **Hand-camera.**—Can anyone tell me whether I could have a quarter-plate camera (Instantograph) fitted for instantaneous work, and how it could be managed? I should not want to use it in the ordinary way, on a tripod, as I have another, a half-plate, for that purpose. It must be light and easy to carry about.—MANSFIELD.

ANSWERS.

6165. **Camera Adapter.**—"J. S." will find full directions for making whole-plate adapter to attach to half-plate camera on page 233 of *Photography* Annual for 1893.—E. Z. M.

QUERIES UNANSWERED.

Aug. 25.—Nos. 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.
" 22.—No. 6161.
" 29.—No. 6162.
Oct. 6.—No. 6163.
" 13.—No. 6164.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret*—ED. AM. PHOTO,

E. Z. M.—Thanks for reply. We shall be pleased to see any prints you send up.

C. DURRELL (Madras).—Mr. Prouting, of Fox Lodge, Tilehurst, Reading, is the maker of the lawn studio you inquire about.

PERPLEXED asks for instructions for working the new platinotype cold-bath paper. Keep the paper as dry as possible, and use an indiarubber pad in printing frame. Expose till nearly all the image, except the very highest lights, is visible in a greyish-brown colour; the time is about one-third of that required for silver printing. After exposure, unless the prints are developed at once, place them in a calcium tube. The developer is the normal oxalate solution as used for ferrous oxalate, and immerse or float the prints face downwards on this till black enough, then transfer to the clearing bath without washing, and three successive clearing baths 1·60 of hydrochloric acid must be used; then wash and dry. How long should bromide prints be washed after development with hydroquinone, and before fixing; and are bromide prints, if properly fixed and washed, permanent The washing between developing and fixing need be only superficial, and bromide prints properly treated are permanent.

W. MALLINSON finds some difficulty in getting density with a combined hydro and eiko developer without getting veil. The best thing to do is to increase the hydro and eiko, and give it time. Generally the veil is due to haste. Metol would probably give the best results for all-round work, and we gave a good formula last week. He also finds Watkins' exposure meter give him hopeless over-exposure. This is not unaccountable, as the meter is constructed to give fully-exposed full-of-detail negatives with a certain developer, and alter the one factor, and you must alter the others; therefore, increase your P. number, and you will get less exposure.

SETAB.—(1) Printed in too strong a light. If this was done to get out the clouds, then mask the land, and print in a weaker light. (2) Good. (3) Wants trimming down slightly. (4) Good. (5) Bad. Forgive us if we call this a bit of trickery. It is a fine effect, but absolutely untrue; it is not moonlight, though a good imitation; avoid such clap-trap, and you will be better pleased with yourself in the end. (6) Slightly over-printed. (7) A little too heavy in the right-hand corner, and paint out the unsupported leaves on the left sky. (8) Negative wants intensifying, and over-toned. (9) Good. (10) Very fair technical work, but not artistic. (11) Sails far too white; the rest wants masking, so as to allow these to print more. Try and use your camera a little more intelligently; don't snap shot everything, but use it more as a means of getting little pictures than mere records of moving objects. Your technical work is good, but you fail in the artistic somewhat.

HON. SEC.—We shall be glad to help you in any possible way with your exhibition, and if you let us know when it is to be held we would run down and see the prints. (1) You omit to state what formula you have been using for preparing the paper. Let us know this and we can help you. (2) A good platinum bath for chloride paper is—

Chloroplatinite of potash	1 gr.
Oxalate of potash	60 ,,
Oxalate acid	5 ,,
Water, distilled	1 oz.

Wash your prints thoroughly free from silver first, then tone, wash thoroughly, and place in alkaline fixing bath. The ordinary tungstate bath can only be used with gold—

Chloride of gold	1 gr.
Tungstate of soda	60 ,,
Distilled water	1 oz.

Your stains are due to touching the prints with not over-clean hands, and not washing properly. Wash them first in salt and water, 1:20. (3) A good dark green on Alpha lantern plates is best obtained by developing as usual, fixing and washing thoroughly, treating with—

Lead nitrate	16 gr.
Ferridcyanide of potash	24 ,,
Distilled water	1 oz.

Washing, immersing in 10 per cent. solution of neutral chromate of potash, washing and treating with 10 per cent. solution of ferric chloride. (4) Aluminium cannot be used instead of gold in a toning bath. (5) Amidol gives black tones on lantern plates of all kinds. (6) Yes, Perken, Son, and Rayment, 99, Hatton Garden, E.C.

ERIC asks where carbon tissue and transfer paper may be obtained cut to size. Elliott and Son, of Barnet, sell 1s. packets of tissue in all colours, and also supply transfer paper.

CROWN sends us a bit of chloride paper with some small white spots on, and states that the edges of the paper show silvery marks to one-eighth of an inch. The white spots, we should say, are due to dust or black specks on the negative, or they may be due to the manufacture; we could not say without actually seeing the working of it by this correspondent. The silvery edge is due to the paper having been improperly kept for some time, where gas or other fumes could get at it. Be sure and get your paper fresh, and do not blame the maker for what is not his fault.

GAINSBORO' MOUNT has a very good silver print, and wishes to copy it, but his camera is not large enough, and wants to know how to do it by contact. It can be copied by contact of course, but it is difficult to get rid of the grain of the paper. In a printing-frame place a sheet of glass, lay the print on this paper side to the front, put a slow dry plate in contact with the print, put in the back, and expose for a few seconds to gaslight, keeping the frame in rapid motion the whole time, to destroy, if possible, the grain.

C. BRIGGS asks (1) for any information about chloride paper. We regret that we cannot answer so indefinite a query without filling the paper; what is the particular information wanted? (2) Can carbon tissue he got in sepia or brown. Yes, it may be obtained in every colour, blue, black, green, yellow, red, sepia, brown, purple, etc. (3) Can enlargements be made direct on to either of the papers? On both, by the use of the solar enlarging camera, or Monckhoven's enlarging apparatus, but as these cost from £20 to £80, probably they are beyond the limits of price. You can make enlarged negatives easily enough, and then print by contact. (4) No, not such good results.

P. O. P.—(1) What exposure would be needed for a winter scene with snow, stop *f*/22, and a slow plate? In our issue of August 25th, p. 126, you will find an article by Mrs. Main on this subject, which answers your question as well as anybody can. (2) Which are the best plates for winter work—Iso or ordinary? The former we should say. (3) What is the reason of two or three dozen Iso plates developing up with white round spots? Air bubbles probably, but we must see negatives before answering definitely. (4) Will ruby paper do for backing plates, and do they require longer exposure? Ruby paper may be used, and the plates do not require longer exposure.

P. J. CREE.—(1) Excellent, a charmingly soft little bit. (2) A little too soft, there is not quite enough differentiation of planes, the foreground is squashed into the background. (3) A good thing spoilt, clouds too black, water too white; printed like No. 1 it would be good. (4) Too muddy and patchy, the hills in middle and tree in foreground are both in the same plane, you want to dodge this a bit in printing. (5) Good. Please let us know what platinum bath you are using; the tone is very good.

F. J. THORNTON asks (1) what is the best position for outdoor portraits, etc.? Facing the north-east, and with the sun shaded off, with some of the top light also; an angle of a wall frequently makes a good corner. (2) Where can I obtain a cheap background? Scholzig, Binfield Road, Clapham; Sharp and Hichmough, Dale Street, Liverpool; Fallowfield, Adams, Watson, Houghton—almost any of our advertisers make special lines of cheap backgrounds.

GEOMETRIC.—The print sent is interesting and good technically, though a rather more brilliant print would be obtained by not printing in the sun. Yes, shading with cotton wool would do for keeping the distance back, but we should prefer matt-varnish on the back of negative. You have used too small a stop, and have thus got such a good rendering of detail that it destroys the atmospheric effect—a longer exposure would also block up the distance more and give you the same result.

A SUBSCRIBER.—We could not possibly say for certain without seeing camera, but we should say you had not been taken in, and that your camera is really one of Samuel's make, whilst the other one you mention is of French manufacture; but what on earth does it matter if you have been? If you bought for 33s. 6d. a camera which will turn out such good work as the print you send us, be content, for with care in selection and composition of subjects your camera can turn out work as good as a ten-guinea one. The covering power of the lens, presuming you used it at anything like a fair-sized aperture, is exceptionally good.

G. N. WILLIAMS asks whether it would not be possible to arrange two lenses in a camera, as though for stereoscopic photography, and in such a manner that they cover exactly the same field in the camera, so that the result would be a combination of the images projected through the two lenses just as what we see is a combination of the impressions received through the two eyes. Now photographs taken with one lens seem like things looked at with only one eye, and they have not that appearance of roundness and solidity which they have when looked at with two eyes. Would not such an arrangement improve photographic results? We must confess that this had never struck us, and whether the use of two lenses, so arranged that the images actually coincided—by no means an easy job—would give more roundness, is not to be answered without practical trial. That it would give stereoscopic relief is impossible, because if the images coincided the result would be a photograph on a plane surface, and this looked at by both eyes would form two pictures on the retina, but the brain would make them coalesce and form a plane again. As a matter of fact two lenses arranged on a camera front with a given distance between their centres will give images which can never coincide, for the simple reason that one lens sees one side of an object which the other does not. Practically the use of two lenses side by side is equivalent to using a lens of very large diameter, and, therefore, if a landscape lens could be obtained which was of short focus and a big diameter, say about 4 in., probably greater roundness but less definition would be obtained. Undoubtedly this is why portrait lenses are so suitable for portraiture, because being of large diameter each side of the lens sees more of its object's side than the other. Probably an improvement in roundness is to be obtained by using uncorrected or single lenses of fairly large diameter, and also with achromatic landscape lenses with their diaphragms opened out. We have an old French landscape lens of 3½ in. diameter and 20 in. focus, which when used at *f*/7 gives very soft results, and we have thought more rounded images, and but for its slowness on account of its fearful green colour, we should use it more than we do.

SUB. asks how print-out opals may be varnished, so that they can be washed. There are few varnishes which are absolutely water-tight, but the best thing to do would be to coat the opal with zapon varnish, made by dissolving 10 gr. of pyroxylin, or celluloid, in 1 oz. of amyl acetate, allowing this to thoroughly dry, which it will do in about twenty-four hours, and then varnishing with crystal varnish.

CORNWALL asks whether there is any permanent ready-toned printing paper now in the market, as he finds the ordinary process too long? There is no such paper; the only thing to do is to choose platinotype or carbon, which require no toning.

JELLY asks how to make gelatine insoluble in water? The simplest method is to add some bichromate of potash about 60 gr. to the pint, and then dry and expose to light and wash well. No information is given as to what purpose the gelatine is required for. Chrome alum raises the melting point very much, and gradually makes it quite insoluble. Uranyl nitrate, red prussiate of potash, mercuric chloride, and several other metallic salts also act in this way, but a film of gelatine treated with a 10 per cent. solution of tannin becomes quite insoluble, and, in fact, forms leather.

T. DAVIS.—Unfortunately, we have forgotten your print, and as it has been sent out on loan with the others, we are unable to refer to it. The small chloride print you send still has the water running up, and it is not due to the widening out of the shore. The best thing to do would be to trim parallel to your water line. The single yacht and the five have a straight water line, and of the two we prefer the five yachts.

A. H. BOOSER (Crewe) sends us two lantern slides covered with a greenish veil. This peculiar fog is iridescent or green fog, and we should say is due to stale plates or else forcing with ammonia with slight under-exposure. Chrome alum and methylated spirit will remove it to some extent, but when present in lantern slides the only thing to do is to make fresh ones.

J. M.—(1) This negative is exceptionally hard, we should think, and not even printing in the sun as you have done has cured it. You might have carried printing and toning farther. (2) Negative weak, and we should say wants intensifying. It is over-toned. The camera was not quite straight, as you will see by left-hand gate-post. (3) What on earth is the centre white patch; is it water? Negative again hard, we should say. (4) Spoilt by printing in the sun, print weak and overtoned. (5) You have just missed the picture; had you got over the fence in the foreground and merely taken the horses and the distance you would have had a perfect picture; we have rarely seen such exquisite atmosphere and distance, but your fearfully black and fuzzy foreground spoils the whole. (6) Good again, although your foreground again spoils it. We can hardly understand how you could miss the pictures in these last two prints, but you must pay more attention to your foregrounds, which may make or mar your picture.

C. J. RUSK says, "Will you kindly tell me the rule to find the proper working distance of a lens from the object to be photographed, as, whether the focus of the lens be given or not, it varies very much as the camera is moved nearer or further from the object; thus a lens of 10 in. focus may require three or four inches extension on the camera unless it be kept at a certain distance. All the text-books I have seen are silent on this question of working distance." This last statement may be correct, but the rule is given in plenty of text-books if you know where to look for it. In photographing an object there is always a definite focus for each distance of object, except when that distance exceeds about 100 times the focus, when it may be considered constant. The only rules we know depend upon the focal length of the lens being known. There is the usual one for enlarging and reducing, viz., add one to the number of times of reduction and multiply by the equivalent focus of lens, the product is the distance between object and lens; and divide this distance by the number of times of reduction, and this will give you the distance between lens and plate. There is another rule which is also useful, and for which merely the distance from object and the focal length are required to be known, and the rule is, square the focal length and divide by the distance, when the result will be the increase in focal length. Suppose you want to copy an object and the camera is 4 ft. from it and lens of 6 in. focus, then $6 \times 6 = 36$, $36 \div 48 = \frac{3}{4}$, therefore the focus will now be 6¾ in. To find the size of image of an object there are three factors which must be known, the size of object, the greater conjugate focus, or the distance between lens and object, and the lesser conjugate focus, or the distance between lens and screen. Thus supposing you are copying a picture which measures 24 in. in the longer side, and the distance between lens and picture is 18 in., and the distance between lens and screen is 6 in., then $18 \div 6 = 3$, the number of times of reduction, and $24 \div 3 = 8$ in., the size of image. It is obvious that from this last equation the equivalent focus of a lens may be found: multiply the greater conjugate focus plus the lesser by proportion of image to object, and divide by proportion plus 1 squared thus: $18+6=24$, $24 \times 3 = 72$, $72 \div (3+1)^2 = 4\frac{1}{2}$ in.

C. D. RICHARDSON states that in developing bromide prints they are all right till put into the clearing bath, when black streaks appear. These are due to touching the paper with not over-clean fingers. The best thing to do is to pour off the developer as soon as the print is black enough, and immediately flood with the clearing solution. After rocking the dish the print may now be touched without danger. A ruby lamp, or a lamp with two thicknesses of canary medium, is the best for bromide paper. The only work on the subject is "Bromide Paper," by Dr. Just, sold by Percy Lund and Co., Memorial Hall, E.C., price 1s. We shall be pleased to criticise prints for you.

A. R. A. wants a good pyro-soda formula which is not fast, will keep, will not fog, and can be used with dry pyro—

Sodium carbonate (pure)	...	...	1 oz.
Sodium sulphite...	...	...	4 ,,
Potassium bromide	...	...	60 gr.
Water to ...	...	...	10 oz.

For use take ½ oz. of above, ½ oz. water, and 3 gr. dry pyro.

EIKONOGEN asks for a good eikonogen formula for snap-shots? One of the simplest developers is a one-solution:—

Eikonogen...	...	...	1 oz.
Caustic potash	...	...	1 ,,
Sodium sulphite	...	...	4 ,,
Boiling water to ...	...	...	20 ,,

Dilute with from 1½ to 5 parts of water; the more water the softer the results. He also asks whether pyro and soda with a few grains of amidol would do for snap-shots. Certainly, but the developer turns black so quickly and is so liable to give fog that we cannot advise its use. The lenses named are cheap French lenses, and some may be good and some inferior. (1) Wants at least two inches off the foreground, and is, we should say, rather a weak negative printed in too strong a light. (2) About ¾ in. less foreground and not so much toning, and the absence of the boughs in the sky would be better. (3) Over-printed, absolutely without sunshine, and too much uninteresting foreground. (4) More over-printing. You attempt too much; panoramic views seldom pay as well as little bits

H. D. BERKELEY.—We can only repeat our assertion of last week that pyro in solution with a preservative, like sulphite or metabisulphite, stands a better chance of keeping in solution than when dry. When kept dry the air finds its way in between the fine crystals, and they must present a greater surface for oxidation than when kept in solution, when only the top of the solution is in contact with the air.

Bijou Enlarging Lanterns.—Finest results with Hughes's patent rectangular condensers, half the size of ordinary make, superior definition, proper diffusion of light, scientifically constructed, not commercial; several whole and half plate for sale, cheap.

The Marvellous Pamphengos. — Finest oil-lighted lantern, perfection, equals limelight, stood the test of over fourteen years against all imitations. Over 3,000 sold; supplied to the Government, School Boards, Science Teachers, the Clergy, and Institutions. Elegant solid brass fronts, high-class lenses, unequalled for definition and brilliancy, from £2 10s. each.

Magic Lanterns, Magic Lanterns.—Largest assortment in the world, cheapest and best, nicely japanned lantern, 4 in. double condensers, portrait combination front lenses, rack and pinion, four-wick lamp, in case, £1 7s. 6d. Others more elaborate, but as cheap

The Docwra Triple Prize Medal, highest award, supplied to Dr. H. Grattan Guinness, Capt. C. Selwyn, Madame Adelina Patti, and the Royal Polytechnic, etc.

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SECOND-HAND CAMERAS AND LENSES, etc. The best place to buy Second-hand Photographic Apparatus is SANDS, HUNTER, & CO., 20, Cranhourn Street, Leicester Square, London, W.C.; who only deal in reliable and best quality apparatus. Approval allowed on all goods, with deposit. Cameras and Lenses, by good makers, bought for cash or exchanged, also let out on hire. Send for Catalogue, gratis and post-free. *Please quote this Advertisement*

PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THIRTY-EIGHTH ANNUAL EXHIBITION, 1893,

At the Gallery, 5a, Pall Mall East.

OPEN from SEPTEMBER 25th to NOVEMBER 15th,

DAILY FROM 10 A.M TILL 5 P.M.

And on MONDAY, WEDNESDAY, and SATURDAY Evenings, when Lantern Slides will be shown.

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The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

We accidentally omitted to state in our last issue that in the advertisement competition the exclusive copyright of the prize negatives will become the property of the donors, and that not more than six or less than three prints must be sent in.

With regard to our Monthly Competitions, we are carefully considering the matter, and hope in our next issue to make further announcements with regard to the same. We have received a very large number of letters on the subject, and we shall shortly pass the suggestions in review and decide what is to be done.

The Salon has received a scathing criticism from a writer in the *Star*. It is so good that we reprint it. After speaking of a certain Japanese artist, the writer, "A. U.," says:—

"To turn from these drawings to the photographs in the Dudley Gallery is to be confronted anew with the folly of the men who call their exhibition the Photographic Salon. One of their objects, they announce boldly, is 'to strengthen and advance the position that photography is making for itself among graphic arts.' There could be no greater absurdity; photography may advance and develop and progress; it may have in store for us surprises and inventions innumerable; but it can never be ranked with the graphic arts. I realise that I repeat myself. I have more than once pointed out the distinction between photography, a mechanical contrivance, and art. But the men who exhibit here rest their claims to critical and public interest upon their artistic pretensions. They make it impossible to notice their work and ignore their ambition to be what they are not. To talk of the drawing made by the sun on the prepared plate is a sad confusion of terms; to vaunt fidelity to Nature as proof of the artistic possibilities of the camera is to misunderstand at the outset the very meaning of art. 'Nature is usually wrong,' Whistler says somewhere: is it for the camera to set her right? A photographer like Mr. George Davison may display much feeling and discrimination in his selection of views to be photographed; but how can he, dependent as he is upon a machine and not upon himself, develop that genius for selection which is exactly what makes the Japanese artist so great? Count Gloeden's photographs of the nude are admirable in every way, but who—save, perhaps, the 'Pictorial Photographer'—would want to class them with the studies of a Degas? And if Mr. Hollyer's portraits, as now exemplified by one of Mr. Walter Crane, are admirable, for that reason are they to be placed in the same category as an etching by Rembrandt? As photographs many of the prints in the collection deserve all praise; Mr. Davison and several others show what can be done with good printing, coarse-grained paper and pretty frames. But they are not works of art, graphic or otherwise, and never will be."

As we have before remarked, we are now entering, or have entered, upon the season for exhibitions, and, if report speaks true, the finest exhibition held for many years, not excluding even Pall Mall and the Salon, will be that of the Bristol and West of England Phot. Soc., which opens in December. The past exhibitions of this society have been notable, and the

committee are sparing neither expense nor trouble to make this one also better than its predecessors.

SINCE, at the suggestion of one correspondent, we have included the questions in conjunction with the Editorial answers, we have had far more letters to answer, and we are pleased to see that the new system seems to be favourably received. We would, however, ask our readers to assist us by sending us their queries as early as possible. In the first place, any letters received after the first post on Tuesday morning stand but a poor chance of being answered the same week, and from the increased work we require a little more time.

SOME of our readers—and a case occurred last week, of one who had been a reader since No. 1, and had never troubled us—seem to think that we mind answering queries, but the more letters we get the more we like it. To the best of our ability we will answer all, and no question is too trivial. All we ask is that letters shall reach us if possible by Saturday or Monday, and that the questions be as concise as possible, though when information is required as to possible failures, full data as to the method of working should be given. When information is required as to particular goods, such as plates, papers, and apparatus, these should be always designated by letters or figures, so as to avoid misunderstandings.

WE have a word to say to the hardworking and energetic secretaries of societies who send us reports of their meetings. What we want is information which will be of general interest to our readers, not particular information as to individuals. The winter season is the season for meetings, and therefore our "Societies' Meetings" columns have almost insensibly crept to inordinate proportions. We have, therefore, been compelled to use the erasing blue pencil pretty freely, and we shall have to do so more freely still.

IT is not of much interest, for instance, to know that "there was a good attendance," or that Mr. Blank moved a resolution, and Mr. So-and-So seconded it, and Mr. This, That, and the Other supported it, and it was unanimously carried. Formal business, votes of thanks, and such absorbing facts as that Mr. Talkwell's very highly interesting and instructive lecture was listened to with marked and breathless attention, all this goes without saying, therefore do not say it, please, or we shall have to score it out and hurt somebody's feelings, and we are always loth to do that. What we want is information that is of practical value—new formulæ, etc.

ASTRONOMICAL photography is as a rule somewhat beyond the reach of most amateurs, and it is only when equipped with costly telescopes that good work can be done. But of the value of photography to astronomers there is no doubt, and if we are to believe a letter which appears in a contemporary, photography ought to be at once employed to settle an important question.

THE writer of the letter in question, Mr. Andrew Barclay, F.R.A.S., of Kilmarnock, has been for some time making metallic speculums, and claims to have seen what neither the Royal Astronomical Society nor the British Astronomical Association will believe. He has discovered that Jupiter has three rings of oval egg-shaped mountains, with four annular valleys, and that in the valleys are dark spots from which he has observed reddish-brown smoke issue. Now, as Mr. Barclay makes certain statements and nobody believes him, why not obtain some photographs and settle the point?

IN the same paper a correspondent suggests the following method of removing pyro stains from fabric:—Make a saturated solution of oxalic acid, and a 1 in 10 solution of chlorinated lime, immerse the cloth in the acid, and then in the lime solution, and allow to remain till the stain is removed. He also adds that if a little rubbing can be used in the course of the process, the pyro will be more likely to be removed physically as well as chemically. We have tried this, and certainly it is very effectual. The pyro stain is totally removed, and the only unfortunate thing is that the fabric is totally removed too.

Flotsam and Jetsam.

WHAT is a "downy photographer"? The professional and the amateur we know, but who is this new arrival? If you look on the play-bills you will find his name is "Binks"—"Binks, the downy photographer," and he nightly appears at the Standard Theatre, where Mr. Willie Edouin employs so much cleverness in the production of his genuinely funny pieces.

OF course, photography was bound to find its way to the stage sooner or later, but it might have had a better *debut*. "Downy!" That word sticks like a burr, and is almost calculated to make any genuine practitioner of the art uppy. There is, it goes without saying, very little photography in the skit. Binks is a stage-struck photographer, and devises a variety show in his studio, where all the actresses go to have their portraits taken.

HOW very much, by the way, the photographer—any photographer, not necessarily a "downy" one—must have helped unknown actors and actresses struggling for fame. Their greatest testimonials are often their photographs, and a glance at the booking-offices along the Strand shows the enormous value of these for advertising purposes. Is it not a little ungrateful to repay such services so?

FAR otherwise does the law, in the person of the Attorney-General, Sir Charles Russell, M.P., look upon photography. In his speech at the opening of the Hackney Society's Exhibition the other day Sir Charles was pleasantly and evidently sincerely complimentary. He had doubtless been well "briefed," as his declarations that "photography was now one of the fine arts" and that it was "the handmaiden of science" showed.

THE exhibition itself appears to be an exceptionally good and interesting one, including some remarkable novelties. The increase in the number of pictures exhibited, too, must be gratifying to the promoters.

A GOOD deal has of late been heard as to the Shaftesbury Memorial Fountain, at Piccadilly Circus, and the rather queer Cupid on the top, who assumes such strange attitudes when looked at from different points of view. A fountain without water is rather an anomaly, but, as was pointed out by "a snapshooter" in an evening contemporary the other day, it is an anomaly which rather pleases than troubles the amateur photographer.

THE possibilities for the hand-camera man in the neighbourhood of the fountain are immense. The policemen, the flower girls, the urchins who differ so much from Mr. Gilbert with regard to that low wall surrounding the base, the thirsty water-drinkers who come up only to be disappointed—here is material in plenty.

But it needs the artist to see it, and, having seen, to give it fit expression. There is room for wonder that far more work with the camera is not done in London than ever has been done. Our photographers go off on their travels to other lands and other towns, and then their eyes are open, but in London they see nothing whatever worth taking.

It is the rarest thing to see a tripod, or even the handy detective camera, at work on the seething crowds who throng the streets, along the embankment by the river, or in the East End. Some day, perhaps, the man will arrive who will see the vast possibilities that lie inherent in all these, and then we shall have a wonderful series of pictures, that all will flock to see at the Salon or at some lantern exhibition.

Mrs. H. M. Stanley's example shows what may be done in one corner of the field. But what photographer has got a shot at the groups of little ones that daily dance so prettily in Drury Lane to the Italian "orgin-man"? Who will be the photographic Chevalier or Jenny Hill?

The other day in Drury Lane, a fine tall woman, Cassy of "Uncle Tom's Cabin" in the flesh, evidently a beauty in her younger days and with the youthful fire still in her eyes, was standing, with a basket of apples poised on her head, engaged in an altercation with a slouching man. What the conversation was is not recorded, but one moment they were talking and the next the basket was on the ground, the apples rolling here and there across the street, with the man scrambling at them and the other loafers aiding him, while Cassy walked off like an offended goddess. Yet no camera was near.

Anchorite.

Letters to the Editor.

VEVERS' ENVELOPES.

Sir,—The experience of Mr. Bassano with negative envelopes reminds me of what happened with the Solio paper as originally sent out in envelopes. These were so folded that there were two lines of gummed edges forming a cross, and, in many instances, probably where the paper had been kept some little time, the paper was marked most distinctly with a brown cross, exactly following the lines of gum, and their discolouration sometimes extended through several sheets of the paper. The cause was obvious, and the Eastman Co. wisely changed their mode of packing, and the markings ceased.

If these negative envelopes are made in the same way, it is not strange that a plate inserted with the film towards the gummed folds should be affected as the paper was. If placed the other way, I suppose the glass would effectually protect the film.—Yours, etc.,

Clifford E. F. Nash.

* * * *

NEGATIVES OF THE EAST-END.

Sir,—May I appeal through your popular journal for the loan of any negatives of scenes in the neighbourhood of Canning Town and Victoria Docks which tend to illustrate the condition of the poor and unemployed in that district? My object is to prepare a set of slides descriptive of the work and environment of the Mansfield House Settlement in Canning Town for the purpose of creating an interest in the provinces in that gracious work. If any of your readers have any slides I shall be pleased to offer exchange from any of my own slides.—Yours, etc., G. E. Brown.

79, Disraeli Road, Putney, S.W.

* * * *

GLAZING GELATINO-CHLORIDE PAPER.

Sir,—I dare say many of your amateur readers have found the above paper sticking to plate-glass when squeegeed on to it, *especially* when backed up with cartridge paper, no matter how well they may chalk and polish the surface. Now I venture to say that the following directions will put an end to all trouble:—Take the wet print and squeegee it on to a perfectly clean, dry ferrotype plate, and when half dry back it up with starch and cartridge paper. When dry it will come off quite easily. Next, place the backed-up print to soak in clean water, after which squeegee it on to a piece of plate-glass which has previously been well cleaned, dried, and polished with French chalk and a piece of chamois leather. When dry, the print will peel off quite easily.

If anyone may derive any benefit from these lines I would feel glad if they would mention the fact.—Yours, etc.,

Raheny, Co. Dublin. Walter Keating, Jun.

* * * *

WOODFORD PHOTOGRAPHIC SOCIETY.

Sir,—May I ask the favour of space in your columns to call the attention of photographers residing in the neighbourhood of Epping Forest to the formation of a society at Woodford.

In commencing we have nearly twenty members, and shall welcome all who may be willing to co-operate in working to make our society a success. Our meeting nights are the first and third Thursdays in each month, and our officers for the first year are:—President, Mr. H. Wilmer; Members of Council, Messrs. E. B. Caird, Henry Crouch, and H. T. Malby. Thanking you, I am, etc.,

Henry W. Bennett, Hon. Sec.

Dacre House, Arundel Street, Strand, W.C.

* * * *

A DEVELOPMENT QUESTION.

Sir,—Myself a great lover of Welsh scenery, and being well acquainted with the district which Mr. Sharer describes, I read his article in last week's Amateur Photographer with pleasure, and I agree with him that some splendid work might be done there by a skilful worker at this season of the year, and even considerably later. It is, however, the concluding paragraph in his letter to which I would draw attention, wherein, in referring to the development of mountainous subjects generally, including distance and mist effects, he recommends "pyro-ammonia somewhat heavily restrained, and with the pyro greatly in excess."

Now, having had some little experience in developing negatives of the character referred to, I have no hesitation in saying that the procedure recommended would be the very worst possible to adopt. Perhaps you would allow me to briefly detail my own method of working. I always, for these subjects, use Isochromatic plates, and latterly have backed them, with advantage to the negatives. By using a shutter of the blind pattern, I generally manage to help matters by graduating the exposure in the manner I have already described in these pages. I develop with pyrogallol, and in the following manner: to each ounce of water I add 1 grain of pyro, 1 grain of bromide, and ½ minim ammonia ·880. This developer, weak in *all* its constituents, I then apply to the plate. Its action will be slow, but the image generally begins to appear in about two minutes, detail will come up slowly, and as long as developing action continues no further ammonia should be added. When detail is fully out, the shadows should still remain fairly clear. If fixed at this stage the negative, though full of gradation, would lack density. I therefore apply a freshly-mixed developer as follows:—Pyro, 3 gr.; bromide, 1 gr.; ammonia, 1 minim, and keep the dish in motion until sufficient density is attained. By so working, all the detail in the shadows of the foreground, which in these subjects are often heavy, is developed out, but at the same time all the delicacy and gradation, the distant mountains and sky, is fully preserved, and not buried in opacity, as it would undoubtedly be if the method advocated by the writer last week were followed.—Yours faithfully,

John A. Hodges

Apparatus.

THE "PRIMUS" SPOT BINDING STRIPS.

W. Butcher and Son, of Blackheath, have introduced a new form of lantern-slide binding strip, in four pieces, 3¼ in. long, ready gummed. One, as shown in the accompanying figure, is provided with a small white space for the title and blank white spots. For



those who do much lantern work, these strips will be found of great use in saving time and trouble, as the easiest and simplest method of binding slides is to use strips the proper length, 3¼ in., rather than the long strips usually employed.

The same firm also issue a combination lantern-slide cover-glass and spot binder, which should take the place of the ordinary cover-glasses, being already provided with binding strips which only require damping and pressing down.

EDER'S HANDBOOK
OF
Emulsion Photography.

TRANSLATED BY THE EDITOR.

(*Continued from page* 261.)

CHAPTER III.
THE QUALITIES AND SELECTION OF THE KINDS OF GELATINE.

(I.) The Influence and Choice of the Kind of Gelatine for the Preparation of Emulsions.

The gelatine exercises a decided influence on the quality of the emulsion; not alone through its consistency, but by its particular nature. (Compare Chapters VI. and X.)

Bromide of silver will not bear a long cooking, or digestion with ammonia with all kinds of gelatine (see Chapters VI. and VII.), and there are also certain bad varieties of gelatine which after a short digestion decompose the bromide of silver and generate fog. But clear and good working samples of gelatine also behave differently. This especially depends upon whether the gelatine is "hard," that is to say, sets quickly, gives a firm jelly, and swells more slowly in watery liquids, or whether it is "soft," that is to say, whether it has the opposite qualities.[1]

A hard gelatine generally permits easier and more speedy work, particularly in summer, because the emulsion, even in hot weather, sets quickly on the plates, the film adheres more firmly to the glass, and after fixing does not so easily float off as with soft gelatine. These advantages are of very great importance. Only since the introduction of these hard kinds of gelatine—which the gelatine factory at Winterthur, in Switzerland (formerly G. Simeon's), first prepared at the suggestion of Dr. Eder early in the year 1881, and which is now produced by Heinrichs, Drescher, and others in good qualities—can emulsion plates be safely produced in warm climates without special precautionary measures. Hard gelatine found universal use first of all in Germany, then in France, and in the beginning of 1882 in England.

But hard gelatine has, with its advantages, also its disadvantages, which must be accurately known before working with it. Hard gelatine gives fog more easily; soft gelatine—for instance, Nelson's—will give clean plates more easily even in inexperienced hands. This defect disappears if the hard gelatine is more diluted (see Chap. XVIII., "Failures") or some soft gelatine is added to it. Bromide plates prepared with hard gelatine take longer to develop. The influence of hard gelatine is, however, only mechanical. Still, such plates can be developed to any desired intensity if they are softened first for a quarter of an hour in cold water, and then either again dried or immediately developed.[2] The slow development can be immediately compensated for by means of the addition of a substance soluble in cold water, which also opens the pores of the film to the developer, *e.g.*, sugar. For these reasons many practical men do not exclusively use hard gelatine for the preparation of emulsions, but mix with one part, a half or one-third of a softer gelatine. In emulsions which are prepared by the help of caustic ammonia, where the gelatine has to bear with more than with mere boiling, the hard gelatine should always predominate.

The following are the principal hard kinds of gelatine: Winterthur (formerly Simeon's), Heinrich's, and Drescher's. The medium soft kinds are mostly collotype gelatines, viz., Kreuz's, Coignet's; and the soft kinds are Nelson's Nos. 1 and 2. Dr. Eder is in the habit of using Winterthur's gelatine.

Founded on the above-mentioned facts, the following points should be specially observed in choosing a gelatine:—

(1) The gelatine should be acid and not alkaline for the process without ammonia; for the ammonia process it is immaterial whether it be acid or alkaline. In English journals the opinion has been repeatedly expressed that the clear kinds of gelatine must always contain some acid generally hydrochloric acid. This Dr. Eder only considers true to a certain extent. All alkaline samples of gelatine which he has come across were cloudy; but every acid kind was not clear and transparent.

(2) Many samples of gelatine contain reducing substances, which cause fogging of the emulsion in boiling or when treated with ammonia, etc. In this case the cooking should not be so long, and one must, therefore, be content with any degree of sensitiveness that may be obtained. Good gelatine should stand half-an-hour's digestion with an ammonio-nitrate emulsion at 35-40° C., without the formation of fog.

(3) Many kinds are especially inclined to the formation of transparent patches or pinholes; the above mentioned gelatines are, as a rule, free from this fault. Unknown samples of gelatine should always be tested in this direction before large quantities of emulsion are prepared therewith, still a practical trial is only to be relied upon.

(4) The gelatine should contain no fat, which, according to the opinion of many photographers, causes small depressions in the film, and bright spots, with blurred outlines, in the negative. Fat in a gelatine is detected by allowing a watery solution of 20-40 gr. gelatine to stand quiet at a gentle heat; spots of fat then show themselves on the surface.[3]

(5) A 4 per cent. solution of gelatine should thoroughly set at about a temperature of 20° C., since a melting point of about 29-30° C. corresponds with this setting point, so that one can be contented with a superficial testing of the samples of gelatine, and very easily estimate the melting point; and then assume that the setting point lies some 8-10° C. lower. The higher the melting and setting points so much the better is the gelatine, provided that it is completely soluble in water at 40-50° C.

(6) The gelatine should be so firm or hard that the films prepared with it adhere firmly to the glass and undergo the operations of developing, fixing, etc., without frilling. Yet if this happens with an otherwise good quality of gelatine a small addition of chrome alum will cure the fault.

(II.) Cleaning and Preliminary Preparation of the Gelatine by Washing with Water and other Substances.

If one mixes gelatine with albumen, and heats it so as to coagulate the latter, the gelatine will become clear, but loses in setting power. Therefore, though such gelatine

[1] "Hard gelatine" is produced by suitable selection of raw materials, careful treatment in boiling, by which means decomposition of the jelly through excessively long or fierce heating is avoided; sometimes some alum is found in hard gelatine, which gives the jelly more firmness. Too much alum is hurtful (see Chapter VIII.). Gelatine which is made during cold weather is better than that produced during hot weather, to which point Dr. Eder first drew attention in the year 1886.

[2] Abney, *Photo. News.*, 1881, p. 415.

[3] Bright transparent spots should seldom be regarded as due to grease; the true nature of the same is not always accurately determined; but, as a rule, to impute the reason to grease is an error, since gelatines quite free from it show the same fault. It is also useless to treat the gelatine with alcohol before using, as proposed by Haarstick (*Phot. Woch.*, 1884, p. 422), for alcohol will not dissolve the neutral grease. Naphtha or benzene, as preferred by Mrs. Scola (*Photo. News*, 1884), as a means of washing is doubtful.

behaves as usual in other respects in emulsification, this method of cleansing is debarred, and commercial gelatine is to be preferred. Sometimes the gelatine is washed. If gelatine is soaked in pure water, gummy substances are dissolved out, which are removed with the repeatedly changed washing waters. Many manufacturers, indeed, recommend buyers of their emulsion-gelatine to wash it for one or more hours in frequently changed water: it should be then used on the same day. Prof. H. W. Vogel[1] warmly recommends this remedy, and asserts that he has by this means made thoroughly useful, many bad samples of gelatine which with the ammoniacal process produced fog and insensitiveness. Dr. Eder does not consider the washing of the gelatine a universal remedy; he found it efficacious in many cases, but the effect was sometimes the opposite, as the gelatine after washing gave less vigorous negatives than before. It is a good plan, according to Henderson's[2] views, to remove all the soluble constituents by bathing the gelatine in solution of bromide of potassium (1 : 100), then washing with water and using.

Washing the gelatine in diluted alkalies or acids acts more energetically on its quality. Ammoniated water is favourable to the increase of sensitiveness, in the ammonio-nitrate process, a fact which Herr Plener first communicated to Dr. Eder. Bathing for two hours in dilute ammonia (1 ammonia to 5 water), and washing afterwards with water, gives very sensitive and clean plates; the rise in sensitiveness can by this treatment amount to twice or three times that of the original; still, the plates lose in vigour and the gelatine frills more easily. Dawson[3] also recommended several hours' bathing of the gelatine in dilute ammonia (1 : 18) before using it for emulsification.

Henderson[4] recommended bathing it for one day in dilute sulphuric acid (1 : 40), then washing with water; very good emulsions with very clear shadows are thus obtained. According to Plener, bathing in 1 per cent. nitric acid makes the gelatine hard and leathery, consequently plates prepared therewith are inclined to blister and frill. Bathing in solution of alum makes the gelatine hard and raises the melting and setting points. Emulsion prepared by the ammonia process with such gelatine is rather insensitive, very clean, and not very vigorous. If the gelatine contains ingredients which give rise to gas, which escapes with frothing when the melted gelatine is placed under the air pump, it must, according to Henderson,[5] be carbonic acid (??) and be the cause of white spots.

(III.)—Alterations of the Gelatine in the Emulsion.

It is important to determine (1) the melting and setting points of gelatine, (2) the changes of the same induced by the addition of alum, (3) the changes which the gelatine undergoes by the action of heat, (4) the progress of putrefaction and the influence of the products of the decomposition of the gelatine on the bromide of silver emulsion, (5) the phenomena of frilling and expansion of the gelatine film, as these points exercise an essential influence on photography with gelatino-bromide of silver.

(1) *Melting and Setting Points.*

The determination of the setting points, which Dr. Lohse[6] first tried, is difficult, because the transition from the liquid into the gelatinous form cannot be accurately determined.

A 4 per cent. solution of gelatine, which concentration about corresponds with an ordinary gelatine emulsion, begins to become gelatinous at 22° C. (mean point). The thorough setting takes place at 20° C. (mean). The mean melting point lies at 28·8° C.

A 10 per cent. solution melts and sets at a higher temperature. The solution begins to become gelatinous at a mean temperature of 24° C. The thorough setting takes place at a mean temperature of 22·3° C. The melting point lies at a mean temperature of 32° C. From this it follows that generally the melting point of a jelly lies about 8 to 10° C. higher than the thorough setting point; further, that a gelatine emulsion melts and sets at a higher temperature the more gelatine it contains. It is worth noting that the setting points of different samples of gelatine differ by about 8-9° C., and the same occurs with the melting points; one must therefore pay attention to this in the choice of a gelatine.

Alum and chrome alum influence not only the general behaviour of gelatine towards the solvents, but also the setting point (see Chap. VIII.).

(2) *Changes of the Gelatine caused by Heat and Putrefaction.*

The changes which the bromide of silver suffers by digestion in the gelatine emulsion, will be treated of in the chapter on the behaviour of the haloid salts of silver in emulsions, but the changes which the gelatine itself undergoes must be more closely gone into here.

The change which the gelatine undergoes in the preparation and keeping of the emulsion, so far as one can at present determine, are of different kinds and as follows.

(A) Decomposition of the gelatine by continued cooking into two substances, as Hofmeister's experiments show[7]; into *semiglutin* ($C_{55}H_{85}N_{17}O_{22}$), which is precipitated by platinic chloride, and is insoluble in alcohol, and into *hemicollin* ($C_{47}H_{74}N_{14}O_{10}$), which is soluble in alcohol, and is not precipitated by platinic chloride. Semiglutin by standing reduces silver nitrate without precipitating it, hemicollin precipitates the silver nitrate in flocks. The loss of setting power of the gelatine by long cooking is produced by this splitting up, which is not putrefaction. This process appears only after cooking for several days to such a degree that the gelatine becomes liquid; cooking for half to one hour is, however, without any injurious effect.[8]

(B) By *continued heating* at 30 to 50° C. the *loss of setting power* likewise appears, but later than in the former case, and it is very difficult to find the boundary where the decomposition through putrefaction, known by the development of gas and formation of copious quantities of combined ammonia, is to be distinguished from the above-mentioned splitting up.

(C) Boiling with even small quantities of ammonia or an acid quickly deprives the gelatine of its setting power, and it seems to undergo the same decomposition, as Dr. Eder observed the formation of considerable quantities of products soluble in alcohol, which were not precipitated by platinic chloride. If gelatine is heated with water which contains 1 to 2 per cent. of ammonia, at a temperature not above 40° C., even after three hours the decrease of the power of setting, and the lowering of the setting point is inconsiderable. When a 4 per cent. solution of gelatine is mixed with 2 per cent. dilute ammonia the setting point sinks after five minutes' digestion at 30 to 40° C. about ·5 to ·8° C., after three hours' digestion at this temperature about 1°C. The setting

[1] *Photo. Mitth.*, 1884, vol. xxi., p. 21.
[2] *Photo. News*, 1885, p. 203.
[3] *Photo News*, 1883, p. 94.
[4] *Photo. News*, 1884, p. 685.
[5] *Photo News*, 1885, p. 203.
[6] *Photo. Archiv.*, 1880, vol. 21, p. 50.
[7] "Chem. Centrabl.," 1879, pp. 57, 71.
[8] Goudoever's assumption that the liquefaction of gelatine in cooking follows simply from the taking up of one molecule of water by four molecules of gelatine, is therefore obsolete.

point has not, therefore, been altered in a prejudicial manner. But, indeed, the gelatine become softer and less capable of resistance, which may sometimes be unpleasant. In this case the washed gelatine emulsion can be hardened with alum or chrome alum.

The fixed alkalies, however, destroy the gelatine in boiling. The boiling of the emulsion when using acid bromide of ammonium, deprives the gelatine much quicker of its setting power than neutral bromide of potassium, which, after what has been said, is easily explicable.

(D) The loss of setting power of the gelatine by continued heat at 30° to 40° C. is almost always the result of a process of putrefaction. The germs of putrefactive organisms are present everywhere in the atmosphere, so that one needs no artificial ferment. The decomposition of samples of gelatine at 30° to 40° C. varies according to the quality of the gelatine. Gelatine which possesses at first an alkaline reaction, gives off even after three or four days ammoniacal fumes, which then quickly increase. Most samples which have an acid reaction give off ammonia fumes only after ten days or even longer.

(IV.) THE INFLUENCE OF THE PRODUCTS OF DECOMPOSITION OF THE GELATINE ON THE QUALITIES OF THE EMULSION.

Gelatine altered by long heating and the action of salts acts not only not beneficially on the quality of the plates, but frequently even prejudicially. It may indeed happen that the changed gelatine frills from the glass, blisters, etc.; for this reason many manufacturers are careful to add part of the gelatine, after cooking, to the cooled emulsion. If an emulsion which contains decomposed gelatine, and in consequence forms blisters whilst fixing, and frills from the glass, is deprived of its water by alcohol, it will be firmer and adhere more firmly to the glass. Alcohol extracts from the emulsion a gummy mass, a fact pointed out by Dr. Eder a long time ago. Alcohol extracts from the bromide of silver jelly, when broken up, the water, as well as the rest of the soluble bromide or nitrate.

It has been observed that bromide of silver, emulsified in such decomposed gelatine, gave thin and foggy negatives; but when mixed with fresh gelatine it furnished clear and vigorous images.[1] On the other hand, Dr. Lohse[2] has noticed that a solution of gelatine which was decomposed by long digestion at 33° C., produced by itself alone a considerable rise in sensitiveness (as a result of the ammonia set free?) if it was added to an emulsion prepared with fresh gelatine, a fact which Nicol confirmed.[3]

The gelatine altered by ammonia and cooking can, for the most part, be removed by washing the broken-up emulsion. Haddon showed that even after thirty minutes' washing, 47 per cent. of the gelatine which had become gummy was removed, if the jelly in question was pressed into little pieces.[4] Only a small part of the decomposed gelatine which has become soluble passes through a membrane (gelatine or parchment paper) by dialysis. Thence it follows that by washing in small pieces the gummy products of the decomposition of gelatine are more thoroughly removed, than by washing in large pieces, because in the latter case only the crystallisable salts (and a small quantity of the so-called colloids) are removed by dialysis.

(*To be continued.*)

[1] Plener observed this first with his centrifugal machine, in which he separated the bromide of silver from the gelatine (*Photo. Mitth.*, 1882, vol. 19, p. 51), and Dr. Eder confirms these statements from his own experience. It has also been observed that emulsion which had decomposed and become liquid, as the result of long keeping, allows the bromide of silver to fall to the bottom; if one pours off the supernatant clear liquid, and distributes the bromide of silver in fresh gelatine, often an excellent and much more sensitive emulsion is obtained (*Brit. Journ of Phot.*, 1882, p. 745). Burton found that bromide of silver cooked for a long time with gelatine, gives green fog in development; if the bromide is allowed to settle down and emulsified in fresh gelatine, clean and highly sensitive plates are obtained. (*Phot. Journ.*, 1882, vol. 7, p. 33.)

[2] *Photo. Archiv.*, 1880, p. 56.

[3] *Photo. News*, 1884, pp. 415 and 447.

[4] *Photo. News*, 1883, p. 108; *Brit. Journ. of Phot.*, 1883, p. 147.

Pictorial Photography; its Principles and Practice.

BY A. H. WALL.

(*Continued from page* 245.)

CHAPTER VII.

ON WATER AS AN ELEMENT OF PICTORIAL EFFECT.

LEONARDO DA VINCI, the great Italian artist, advocated the habit of studying nature at all times, and said a painter should never be without his tablets on which to jot down suggestive, useful facts. The advice he gave painters photographers may take with the same certainty of benefiting by it. By systematic observation they may often detect modifying influences which would otherwise have escaped their notice, influences which give a meaning or a charm, at no other times observable, to this or that bit of landscape scenery.

More particularly is this a valuable and desirable practice when water is present, for its expressions and conditions vary with so many subtle degrees of change, and its faithful representation is at all times secured with so much difficulty, whether on glass or canvas, with the aid of palette and brush or camera and chemicals—the bright, more or less rapidly flowing surface, its varying degrees of transparent depth, the different reflections of earth and air, and hundreds of accidental circumstances, such as a ferry boat, a stately swan, cattle drinking, geese swimming, beds of rushes, fallen trees, a boat, boys bathing, the encircling ripples of a fly-catching fish, a movement of the camera to the right or left, backward or forward, upward or downward, the branches of a half-submerged tree, a fisherman in a punt or on the bank, the darkening of a reflected hill side under a passing cloud, or even a stone thrown in, etc.

The most common faults in photographs of water are a want of transparency, the utter loss of all but a mere blank outline in the too strongly-lighted passages, patches of meaningless white here and there, near and far, giving a spotty, eye-confusing effect altogether distructive of truth and pictorial composition, a want of tenderness, transparency, delicacy, and flatness where the darker reflections prevail, etc. Sometimes an entire river goes winding its way through the landscape without a ripple or a single reflection, as if it were a piece of plain white paper stuck down on the photograph. In this case it was probably taken in broad bright open sunshine, lamentably over-exposed and developed by some human machine as unobserving, unsympathetic, and unimaginative as the camera itself. It always seems to me that a grey, quiet day is the best time for lake and river scenery, and in many instances such an atmospheric condition will lend itself most harmoniously to its general character. But in all cases the artist should let the characteristic effect of the actual scene decide its treatment; in other words, he should not shirk a difficulty if by so doing he sacrifices the sentiment and feeling of his forthcoming picture. Quiet pastoral valley scenery amidst low-lying hills, fields, and meadows having an idly meandering river for its dominant feature might be helped by everything associated with ideas of repose and tranquillity. Let lights and shades blend tranquilly; let nothing be

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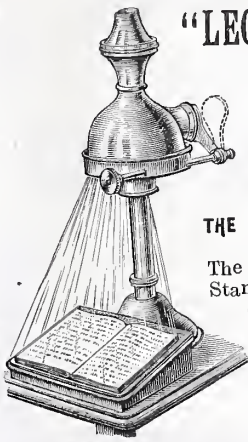
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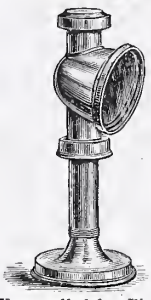


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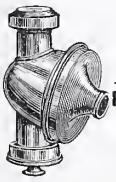




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staringly prominent or loud, nothing too energetically alive. If you have a fishermen, let him be talking with no companions, but lonely and restful, placidly watching his float, not even throwing a fly. If you have any other figure, let it be one with a book under a tree, and if you have two figures let them be palpably lazy, lingering lovers, *whispering* as if unwilling that even a passing zephyr should catch their ardent words. Allow no noisy children to romp in such a scene, no passenger to shout for the ferry boat, no sportsman to discharge his gun. All these features may be desirable in another scene, but here they would be out of keeping. Anything that will indicate that the spot depicted is an unfrequented one will aid you. Let the distant hills melt *tenderly* into air; let the flow of the water suggest its *gentlest* murmurings, such as hot, dry, *languor-begetting* weather brings. Keep the line of the horizon low, and so on, and so on. To enforce this view I may add that just such an effect as would harmonise with such a river scene Ruskin describes in his remarks upon a drawing of Ulleswater, made probably in 1808, by Turner.

The great critic says: "The lake is quite calm; the western hills in grey shadow, the eastern massed in soft light. Helvellyn rises like a mist between them, all being mirrored in calm water. Some cows are standing in the shallow water in front; a boat floats motionless about a hundred yards from the shore... This was evidently Turner's record of a quiet evening." The painter afterwards made a more finished painting from this very study, but, as Ruskin also tells us in it, we have "the same hills, the same shadows, the same cows. They had stood in his mind on the same spot for twenty years," with "the same boat."

In this we see how Turner preserved his observations for future use, as Da Vinci said a painter should, and as Shakespeare said the student Prince Hamlet did. The quiet cattle chewing the meditative cud, with their not less placid reflections, the tranquil, soft grey shadows sleeping on the hill-sides, the lazily rising mist, and the boat at rest, all these are what the artist calls accidents or accessories, and in all of them we recognise a strengthening of the one leading idea, the main characteristic of the scene is strongly marked, everything is strongly suggestive, soft and gentle, silence and loneliness are felt as all-pervading.

But we know how in other scenes this true poet-painter adopted other ideas, how in one all the accidents and accessories speak of active energetic action of life and its business aspects, how in another everything is grand and stately and dignified, and in yet another how everything speaks of that solemn gloom which is the prevailing idea. For a prevailing idea of one kind or another every picture should have, for otherwise it is like "the play of Hamlet with the character of the Prince of Denmark omitted by particular desire" in a certain booth theatre in the last century. How that silence would have been broken up had Turner introduced a barking dog and a shouting shepherd boy with bleating sheap, by a scattering about of bright, sparkling, self-assertive lights, and isolated bits of black! Water rushing impetuously down a rocky course, leaping the boulders and foaming between them, or water dashed headlong down in one vast sheet over the edge of a precipitous cliff, should each claim the thoughtful examination, the recording tablet, whether the artist paints or photographs.

But in adopting this advice be careful to do so without overstepping the modesty of nature, without forgetting that the great aim of all art, poetical, dramatic, or material, is to conceal art. Let the spectator's feelings and imagination be touched before he knows how or why. If a first glance tells him what you have tried to do, you have failed. Keep in the dark. Let your well-sharpened pointed shaft hit the mark before your mark knows you bent the bow. To do all this is not easy. I have never said it is. Opportunities have to be sought, chances have to be waited for, observation has to be exercised, and patience tried by many successive failures. But what has been done in photography of late years fairly shows what may yet be done, and what may be hopefully attempted. The two photographic exhibitions now open, which I had the pleasure of last week visiting, are abundantly encouraging to even the most ambitious of artist-photographers. I came from them full of pleasure and enthusiasm, looking back upon the scores of exhibitions I had seen in which there was hardly anything but more or less ugly, or comparatively flat, dull, artistically uninteresting failures. These triumphant displays came from those numerous defeats, and the victories of to-day may therefore fairly be regarded as the promise of greater victories in the future *if* progress be still sought in the right direction.

I add this little because there are some indications of a retrogressive movement, attempts to substitute for real intellectual art qualities, mechanical imitations, imitations not of the moral or poetical elements of a painter's work, but of his paper-maker or his manufacturer of artists' materials. A bad photograph will never be made a good picture by merely printing it upon a grained surface, or rough drawing paper, or paper with a ridiculous regular staring pattern on it, or paper made to look like canvas, or the substitution for it of some textile fabric. Yet a paper that is tinted instead of white, rough instead of smooth, and carries a graduating stipple of light into every part of the photograph, is properly used—by no means a bad idea, and may often be very advantageously used—not, however, *always*. As sea, lake, pond, pool, river or stream, chattering with musical baby voices in the brook, or running in silent rivulets half lost in the grass they give a fresher green; oozing from great reservoir beds of mountain moss and trickling down into the plains to become famous rivers—in all their forms, as in all their phases and diversified expressions, they delight the artist's eye. The unobservant, unimaginative, and unpoetical may see nothing of any of these picturesque features; and what they do not see that they will, of course, never try to represent. Misled by the idea that water is water, they wed it to no other idea, its beauties are unrecognised, it awakens no new thought, touches the heart with no deep feeling. If the photograph they produce says water is so like blank white paper that you could not tell one from the other, they never dream of disputing its truthfulness.

Where I reside the Warwickshire Avon runs, one of the most frequently photographed, drawn, and painted, perhaps, of all our rivers, being certainly one of the most picturesque, to say nothing of its Shakesperean associations. Hardly a day passes in spring, summer, or autumn that one may not see cameras on its banks in this neighbourhood, the bulk of them being the property of amateurs from all parts of the world, and very largely from America. I have seen many photographs of it obtained under varied conditions, of different degrees of excellence, and the reverse. One of the last and best of these was produced by an American Shakespearean pilgrim, as enthusiastic in his love of Shakespeare as he was in his practice of camera-art. He said, if his negatives of the Avon had been the only product of his most enjoyable travels through Europe, he would have considered them cheap at the cost.

I must defer the conclusion of this chapter, as there is much yet to be said on its subject from a practical point of view.

West Surrey.—The opening meeting of their winter session was held on the 18th inst. In the absence of Mr. P. Thornton, the chair was taken by Mr. W. Winsford, Vice-President. After the usual formal business, the Chairman presented certificates to the owners of successful pictures at the last exhibition, and also awards to the value of 10s. 6d. in apparatus, to the winners at the summer competitions. An excellent series of slides was then shown in the society's lantern; those of "Cloud Effects," by Mr. Graham, and "Sketches of London Life," by Mr. P. Martin, calling forth well merited applause. Upwards of 200 visitors appeared greatly to appreciate this interesting exhibition.

Splashes of Ink.

BY PENFEATHER.

MANY readers of the AMATEUR PHOTOGRAPHER will agree that reports of society meetings are, as a rule, very dry reading. The bare record of the ordinary business transacted can be of interest only to the members of the society, and the fact that prints or lantern slides were shown by Messrs. So and So, and duly admired, can hardly be expected to arouse much enthusiasm amongst those who subscribe to a photographic periodical with a view to extending their knowledge of photographic matters. It seems, to judge by the reports, that some societies exist for the purpose of the glorification of their officials, instead of for the advancement of photography; that they are, in fact, "mutual admiration" rather than "photographic" societies. A single question relating to a difficulty in ordinary practice, and an intelligent answer thereto, are more worthy of record than a column of twaddle concerning the doings of individuals. If a society's report is to be looked on as a mere advertisement, why not pay for it as such?

The recent "Congress of the Photographic Society of Great Britain and Affiliated Societies" ought to have been an unqualified success, for the programme was exceptionally attractive, but it must have been extremely disappointing to those who had the trouble of organising it to find that their free and cordial invitation to all interested to be present was so ill-responded to. It may be that the place chosen for holding the meetings, the room of the Society of Arts, had an influence in the matter, and that the funereal gloom of that "chamber of horrors" frightened people away. Even the exhibition of the photographs in natural colours "falled to attract," although that, surely, was of popular as well as of scientific interest. In striking contrast the lantern show held on the next evening at the Exhibition gallery was inconveniently crowded. It has been said that the photographer of to-day bates science. Is this true?

Mr. A. Maskell, in a needlessly ill-tempered communication to a contemporary, tells us that the Salon is the first of a series of exhibitions of a similar kind. There is no reason why it should not be. London can well support two photographic exhibitions during the year, but it would be well to hold them at different times. That there should be rivalry between the Salon and the Photographic Society of Great Britain was inevitable, and it is an insult to common sense to pretend that no rivalry exists, but in future it should be not the rivalry of enemies, each anxious to devour the other, but the reasonable competition of workers to the same end but who choose different paths to attain that end. Of the two exhibitions now open, it may be said that both are admirable. The Pall Mall Exhibition has been pronounced by those most competent to form an opinion the best of the long series which the Society has held, thirty-eight in all, according to the catalogue; but few words of commendation are to be heard of the decisions of the judges. Indeed, their awards would appear to give colour to the innuendo that being most of them interested in the rival show, they have done their best to make the Society appear ridiculous. Of course, such an idea is absurd; judges are but men and, like other men, their thoughts and actions are liable to be dominated by the craze of the hour. It happens, however, unfortunately that the present year is peculiarly unsuitable for the display of such vagaries as they have indulged in. The Society has done wisely in reducing the number of exhibits, and particularly wisely in not banging any frames lower than where they can be seen without stooping. In other directions there is evidence that the reforming spirit is present and, indeed, not before it was needed.

The Salon is a most interesting exhibition. Its success is probably greater even than its promoters anticipated. It is a formidable rival to the Pall Mall Show, as it was intended to be. The best has been made of a very depressing gallery, and it is evident that no pains have been spared over it. Those who, like myself, are chiefly interested in the art side of photography, have looked forward to it with curiosity, knowing that every effort would be made to show the best of photography in its art capabilities as distinct from photography as a science. With the pictures there I am pleased, interested, amused, and I must add sometimes disgusted. The number of really admirable pictures at the Dudley is perhaps greater than at Pall Mall, but on the other hand Pall Mall, though it contains much that is commonplace, has very little that is tawdry and meretricious, and therefore contemptible, which cannot be said of the Dudley. There has been some comment in the photographic Press on the treatment of the committee compared with that accorded to outsiders, which will no doubt bear fruit, and the mistakes in this direction will not be repeated. It certainly seems that the interests of some of the committee would have been better served if the selection of their pictures had been made more strictly according to merit. To take one example, Mr. R. W. Robinson, who has no less than eleven exhibits. Surely it would have been a kindness to make a wise selection of two or three of these. There is no useful purpose served by demonstrating that such wishy-washy inanities can be produced almost by the gross. The hanging is in many respects admirable, but herein a lesson might be learned from the vandals of Pall Mall. In a commercial sense it may be smart to bang pictures where one has to go on hands and knees to see them, but commercial considerations were not involved in this case, and, apparently, there is no excuse for this error on the part of the executive of the Salon.

To the World's Fair.

BY A LUNATIC WHO WENT THERE.

(*Continued from page* 266.)

NOW I must hark back a little, for in my necessarily fragmentary and disjointed notes I have said nothing about the great World's Fair, the main object of our trip. And there is really very little that I can say about it that will be at all adequate. Like Niagara, it is so big that one cannot realise its size, so beautiful that the impression grows and grows for weeks after having seen it. Its result is a feeling, an inspiration, an enlargement of soul, such as I have not felt in Paris or the recent great London exhibition. It embodies a touch of divine inspiration, something of the spirit of those men of old who reared our great cathedrals. And it is characteristic of the western spirit that the great architects of the States are content to embody their ideals in wattle-and-daub erections that spring up in a few months, only to disappear in a few months more.

The great difference between this exhibition and others, is the divine touch of which I spoke that gives it a grand harmony of purpose, embodied in an infinite variety of detail. And even the detail is beautiful. Some of those mural paintings, under the great arches of the doorways, are works that it is a perfect sin to inscribe on perishable plaster. No one who has seen the great show can deny for a moment that there is a strong current of earnest practical artfeeling in the American people; and no one who has examined the mural paintings, the statuary, or even the judges' badges and some of the season passes, can doubt that there are many American artisans who can carry into practice their artistic ideas. It is true that there are differences of style and great inequalities in the work. Some of the great statues struck us as being stiff, awkward, exaggerated. Even the McMonnies fountain, beautiful in conception as it undoubtedly is, and beautiful as it looks in drawings and photographs, is a disappointment when carried out in the white "staff" of which the exhibition buildings are composed. It seems more suitable as the design for a silver centre piece to grace a Lord Mayor's table. But on the whole the work is grand. The magnificent gold statue of the Goddess of Liberty, some fifty feet high, that stands in the grand lagoon, some of the animals, bears, boars, horses, elk, oxen, and others, that guard the bridges, and some of the principal water-steps are powerful works. And so are many of the statues that stand in rows over the great peristyle and round the tops or over the entrances of some of the main buildings. Many of them would look magnificent in bronze or marble. But they are to be broken up and ground in a mortar mill, and the one irreparable wrong is in the fact that photography, the only power able to preserve these things of beauty and make them into "joys for ever," has been practically barred out of the place by an unfortunate concession, given to a man who is as much out of touch with the spirit of the exhibition as a feudal baron. If photographers' lurid malisons could hurt a man, concessionaire Arnold would have bad a bad time. But he does not seem to care. His extortionate charges have kept away thousands of cameras that would have taken records innumerable, and that would, by print, by process block and by lantern slide, have spread the fame and carried the educational work that was the main object of the exhibition into all lands. Hundreds who did take their cameras into the grounds for one day would, with fair play, have spent many days there, and would have got pictures that would have been a credit to themselves and to the exhibition. Probably the official photographer thought that the amateurs would buy his prints and slides, but in the case of our own party, and of others that we met, it acted the other way. We should have bought many slides to complete our sets, but the restrictions so annoyed us that we said "we would not touch the rotten things," and I believe that the grumbling of some of the amateurs in the hotel was the means of preventing several tourists from buying prints. I spent two days photographing in the grounds, and could have pleasantly spent two weeks. I think, and my friends are of the same opinion, that those who spent their time in walking

around and getting a good general idea of the buildings and grounds were wiser than those who walked through all the buildings, one after another, looking at everything and remembering nothing. We went carefully through the Fine Arts building, and through those parts of the Liberal Arts building that were devoted to photographs and photo materials. The loan collection sent out by the Society of Arts was exceedingly fine, and very creditable indeed to Great Britain. It will be a very great pity if such a magnificent and representative collection is allowed to be distributed to the various owners of the pictures without giving British photographers a chance to see it in England. It is quite certain that no collection so fine or so complete has ever been seen, unless it was at the Vienna Exhibition, of which such glowing reports were given. The exhibitors of materials included Messrs. Ross and Co., who had about the finest all-round display, including some very fine views of the exhibition in platinum by the official photographer; Messrs. R. and J. Beck, who had a large collection of Frena cameras and snapshots taken with them, as well as enlargements from the same; and Messrs. W. Watson and Sons, who had some very good light cameras, lenses, and lantern slides.

In the American section, of course, the dealers' display was much larger. I did not take any notes at the time, so can only mention those I happen to remember. Our friend, Mr. John Carhutt, who looked after us so well in Philadelphia, had one of the finest stalls, and though we did not then know him personally, we made use of his dark-room to change our plates. This was a great convenience, and the kindness of the dealers who gave such privilege without charge was in fine contrast with the treatment of photographers by the official who represented the management. The dealers in question were the Cramer Dry Plate Co., the Eastman Co., and E. and H. T. Anthony and Co. All these people had very beautifully arranged displays of fine and well-chosen work. Most of the prints were on gelatino-chloride paper, and the Eastman Co. had fine enlargements on their "permanent" bromide paper, of course from Kodak negatives. The Blair Camera Co., which I see by the advertisements has just opened a branch in England, showed many prints and enlargements from negatives made on their films in their cameras, from which it was evident, not only that the cameras could do good work, but also that they are used by good workers. The Photo-Materials Co., of Rochester, seemed to have an incomplete display which we were told was due to their factory being incomplete. The Bausch and Lomb Optical Co., whose place we saw in Rochester, made a display that we should hardly have taken for a photographic one, for it was almost all spectacles. It seems that this firm does all kinds of optical work, and that spectacles are one of the chief branches.

The photographic display of the United States was not nearly so good as that of Great Britain. It was all professional work, and almost all portraits. It was very fine work, but I do not think it was any better than the professional portraits done in London. It was almost all, except the enlargements and very large prints, on gelatino-chloride paper, and I do not think it was in all cases as good as the same negatives would have given in platinum, or if they had been squeegeed to a matt surface. In many cases the negatives seemed to be much finer than the prints, which is sure to be the case when a certain printing process becomes a craze, just as the craze for platinum has led many people to use it for subjects to which it is not at all suited. Some of the portraits that were done in platinum and on matt-surfaced chloride paper were about the best there were. The landscapes shown by Mr. Jackson, of Denver, were amongst the finest we had ever seen, and I am sure they would take the medal of the Photographic Society of Great Britain if they were shown at Pall Mall.

About the best view-points I need say nothing, for I fear that before you print this (if you do print it) it will be too late for any of your readers to start for the Fair.

Off Queenstown again.

I can add little more to my rather scrappy notes. It is sincerely to be regretted that the attendance at the World's Fair has been so small, for it is a loss, not only to the promoters, but also, and in a far greater degree, to the world. It is a great pity that the show cannot be kept open for another year, but this seems impossible. After all, it is more as an example of the solidarity of humanity, and as a factor in the direction of international friendliness and peace, rather than as an exhibition of things and of merely material progress, that the exhibition had its chief value. The World's Congress, with its motto "Not things, but men; not matter, but mind," was the great and distinctive feature of the exhibition, the key-note of its chief usefulness. And though the exhibition closes, the work of the congress will be continued in many ways. In connection with photography I hope that one result will be that we shall see more of the work of American cameras in our English exhibitions, and hear more of American travellers joining our conventions and giving papers at our societies' meetings. I hope that some of our really good English workers, not mere inexperienced amateurs like our party, will spend some time in the States, and give us really adequate renderings of some of the beautiful and wonderful scenery. I think that Karl Greger, Cemhrano, Davison, H. Tolley, or B. Gay Wilkinson could produce pictures that we, in England, should be very glad to see and that would give many a useful suggestion to the American enthusiasts.

At any rate, whether photographers or not, any one who spends a holiday in the United States, with open eyes and an open mind, will have such an enjoyable time as he will never forget. He will see the Americans, who are our near kindred, as they really are, and not as our humourists are fond of depicting them—not even as they too often represented by some of their number who visit England, and whose vulgar offensiveness can only be equalled by that of the bigoted Englishmen, full of insular prejudice, who sometimes visit America. They will find a generous, warm-hearted people, blunt at times, but kindly and courteous always, and will realise something of the spirit in which Lowell says of Great Britain :—

> "She and Columby's got to be fast friends,
> For the world profits by their private ends.
> 'Twould set the clock back all of fifty years
> If they should get together by the ears."

Birmingham.—Meeting on 17th, Mr. J. J. Button in the chair. A number of fine photographs lent by the President were on view, and consisted of enlargements made from negatives taken by him on his recent tour in the West Indies and Brazil, which were very much admired; and of a very fine series of Irish views, which were the work of a professional.

The Affiliation of Photographic Societies.—Meeting of delegates was held on 17th inst., Mr. E. Clifton (Photographic Club) in the chair. The minutes of the last meeting were confirmed. The report of the sub-committee appointed to consider the question of endeavouring to obtain from the railway companies concessions to photographers similar to that to anglers—in which the committee stated that they had made inquiries, but were unable to recommend any course which would hold out a reasonable chance of success—was adopted. It was proposed by Mr. P. Everitt (L. and P. P. A.), seconded by Mr. Hodsoll (North Kent P. S.), and carried—"That the Secretary be instructed to communicate with the principal railway companies with a view of securing for members holding return tickets the privilege of breaking the journey at any intermediate station." The report of the Conference of judges was adopted unanimously, and the Secretary instructed to print and publish the decisions arrived at by the judges. The question of certain additions to the rules was taken up, and it was decided to submit the alterations to the Council of the P. S. G. B. for approval. On the proposal of Mr. Everitt, seconded by Mr. A. F. Taylor (Ealing P. S.), it was resolved to petition the Photographic Society to remit to members of affiliated societies the wall space charges at the exhibitions, pointing out at the same time that they knew of instances in which other exhibitions had received exhibits which would have come to the Photographic Society's exhibition had it not been for the wall space charges.

The Colours of Natural and Artificial Light.—Captain Abney has contributed to the Royal Society the results of some further experiments made with his colour photometer upon sky light, sun light, cloud light, and candle light. He has made several comparisons of these lights throughout the different parts of their spectra, and has been able to verify their correctness by means of templates rotating in the spectrum of electric arc light, as described in former communications on the same subject. It was endeavoured to express the colours of these various lights in single wave lengths, together with the amount of added standard white light. The result does not appear to have been very conclusive with regard to the artificial light of the candle, although it was found that a close match with this kind of light could be made by adding sodium light to that of the electric arc. Generally, it appears that the dominant light of a blue sky is very nearly the colour of cobalt, although the pigment may require to be mixed with Chinese white to make a match. With regard to direct sunlight, it was found that this contains slightly more green-blue rays than the light emitted from the crater of the positive pole of an electric light. The dominant colour of cloud light taken from the zenith when the sky was overcast at near mid-day, was between that of the sky and of the sun, as might be expected, and is decidedly whiter than the sky, as might also be anticipated. Captain Abney adds, with regard to observations of the light of a candle, that a large number of separate observations are required of the part of the spectrum in which the dominant colour is to be found, in order to get a good and fairly trustworthy mean. From this it may be gathered that the light of a candle is not much more to be relied upon for the purposes of colour photometry than it is for light measurement.—*Ex.*

Exhibitions.

SOCIETY.	ENTRIES CLOSE.	OPENS.	CLOSES.	ADDRESS OF SECRETARY.
P. S. G. B.	Sept. 13	Sept. 25	Nov. 15	R. Child-Bayley, 50, Gt. Russell St., W.C.
Hamburg	—	Oct. 1	Oct. 31	Das Ausstellungs Committe, 33, Schwanenwik, Hamburg.
Photographic Salon	Sept. 27	Oct. 9	Nov. 11	Sec., 215, Shaftesbury Avenue, W.C.
East London	Oct. 23	—	—	W. R. Gould, 61, Gibraltar Walk, E.
Hackney	Sept. 30	Oct. 17	Oct. 19	W. Fenton Jones, 12, King Edward Road, N.E.
South London...	—	Nov. 7	Nov. 11	C. H. Oakden, 53, Melbourne Grove, Dulwich, S.E.
Leytonstone Camera Club ...	—	Nov. 20	Nov. 25	A.E. Bailey, Rose Bank, South-west Road, Leytonstone.
Stanley Club	Oct. 31	Nov. 17	Nov. 25	W. D. Welford, 57 Chancery Lane, E.C.
Madras	—	Dec.	—	Hon. Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28, 1894	113, West 38th Street, New York.
Bristol		Dec. 18	Jan. 22, 1894,	F. Bligh Bond, 36, Corn Street, Bristol.

HACKNEY PHOTOGRAPHIC SOCIETY.

THE general appearance of this show was good, although it would have been much improved by a deeper background than that on which the pictures were hung, and if some of the exhibitors had cut down the, in some cases, large expanse of white mounts. These have rather the effect of making the walls look bare and the pictures scattered. The quality of the work is decidedly high, and we think, superior even to previous exhibitions. In the members' class, Mr. S. J. Beckett takes the champion gold medal for 132, "Evening, Verona, Italy," a very fine print, with an exquisite sky, and printed in a pleasing warm brown tone. Mr. W. A. Hensler sends in a lot of work, mostly of high order, and for 14, "Reflections, Tasmania," is awarded a silver medal, but we think Mr. Hensler will do well not to handicap his pictures by unsuitable framing, which he has done in some cases. Other noticeable pictures in this class are Mr. T. H. Smith's leafless tree studies, 88, by Mr. Pollard, which wins a silver medal; and 142 and 143, two interiors of the life school at the Polytechnic, by S. J. Beckett, are very fine examples of interior photography, where the difficulties are increased by the presence of so many figures. Dr. Roland Smith has some well-executed interiors, the best being "Rochester"; and Mr. J. O. Grant shows a very charming bit in 147, "The Bend of the River."

In Class B, for hand-camera work and enlargements, Mr. R. Beckett takes the silver medal for a sunset at Trondheim, which is too dark and muddy in the shadows, we think; 214-217, by the same worker, are all good work. Mr. T. E. Roofe takes a bronze medal for 164. There are some really good snap-shots in this class, one of the most pleasing being 187, "Sunset from Gravesend Pier," which is far truer in tone than many sunsets we see.

Class C is very poor, and the judges did well to withhold the silver medal. Mr. F. W. Gosling takes a bronze for 276, "River Roding," though we think more could have been made even of this.

Class D is for members' lantern slides, and here Mr. S. J. Beckett again scores, but was not allowed by the regulations to take the medal. Mr. W. A. Hensler takes the bronze, and some really good work is shown here, noticeable being the work of Messrs. R. Beckett, Roland Smith, and Fenton Jones.

In the Open Class, E, Mr. J. B. B. Wellington takes the silver medal for an exquisite evening study.

Mr. Warneuke takes the bronze for 360, a landscape. Other noticeable pictures were 322, by H. W. Bennett; 403, some tree studies by Birt Acres; some of W. Thomas's exquisite hand-camera shots; and 379, "Sun, Fog, and Frost," by R. Frost, is an ideal rendering of a winter landscape. 330, by C. Tylee, was also good, and 332, a beautiful figure study by J. C. S. Mummery, and 402, by J. H. Anderson.

Class F, portraiture and genre. The judges withheld all awards, a course hardly justified in the presence of 418-20 by La Rose, some exquisite work.

In the Champion Class, G, Mr. J. B. B. Wellington again is successful in winning the gold medal with his well-known "Evening," and it is in good company with a lot of very fine work, noticeable being the architectural work of F. W. Edwards and C. H. Oakden. For open lantern slides Mr. W. England takes the silver, A. Brooker the bronze, and W. Taverner an extra bronze, though this last set is spoilt by a hideous-toned flower study. Amongst the pictures not for competition are some of Elliott and Son's examples of jumping horses, on their new Rocket plates, some specimens of photo-mechanical printing in colours lent by E. J. Wall, and some specimens of the best of Mr. Thos. Fall's dogs, and also two outdoor studies of Mr. and Mrs. Gladstone. This is by no means the least interesting class, and Mr. Beckett's enlargements and Aug. Wilson's fine large portraits add considerably to its appearance.

Platt and Witte, of Ridley Road, Dalston, have a good display of fittings and lanterns of all kinds, and in particular a new one, which is very small and neat and arranged for projection, enlarging, and scientific experiments. It has a bellows front and a new lever cam locking jet, and the whole fits into a box which can be used as a canting table. We shall refer to this again.

W. Watson and Son, of 213, High Holborn, showed their Alpha camera and well-known Acme mounted in aluminium, also a neat album for prints, which require no mounting, the prints being slipped into position. One of the most striking things on this stall is a big print of the yacht *Britannia* taken with a Watson's R.R. of 20 in focus and special shutter. Besides all the usual requisites a good selection of lenses in aluminium are shown, and a new form of lantern reading lamp with signal, which with a special technical instruction lantern we shall notice in a subsequent issue. Mr. A. P. Chalke, of 103, Broadway, S. Hackney, makes a special show of frame mouldings, and Morris, late Thomas, of 411, Mare Street, has also a good show of requisites. Fuerst Bros. exhibit their specialities in developers, and also some good negatives treated with the same.

Holmes and Watson, of 35, Danbury Street, N., make a special show of Matthews' Portable Lantern, in which several slight improvements have been made, and also Parvin's saturator, an opportunity of trying which we have lately had.

Hannam and Co., of Soho Square, have a very good show of their mounts, albums, and some new waxed paper vignettes and clouds, the Kensington albums, and Christmas and New Year Cards.

W. Wray, of Laurel House, Highgate, has a case of brass and aluminium mounted lenses.

H. Park, of Station Buildings, Kingsland, has a very good show of apparatus, and takes the silver medal for apparatus. We shall notice the particular novelties later.

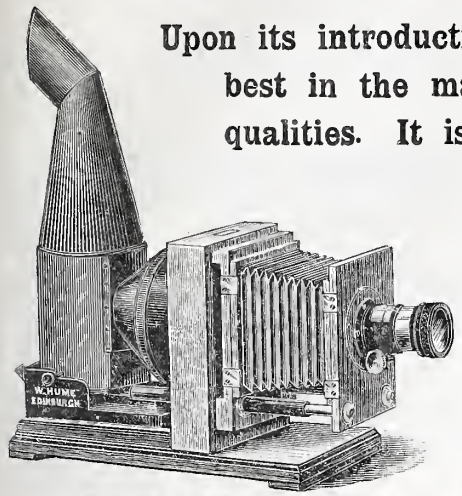
T. H. Powell, of 116, Denmark Hill, shows his compressed chemicals and lantern slides, negatives and prints treated with the same.

Rawlings and Co., of Mare Street, show the usual materials and a good selection of frames and prints of well-known pictures.

J. and H. Doublet also show the usual materials and Hill-Norris collodion plates. Marion and Co. showed Downey's Art Studies, bromide printing lamp, and Radial hand-camera, and the Hurter and Driffield's actinograph, their new negative holders and developing and fixing cartridges.

Ealing.—On 19th inst. Mr. S. H. Fry gave a lecture and demonstration on "Paget Printing-out Processes." Comparing gelatino-chloride with albumenised paper, he claimed for it the following advantages: being made by machinery the silver salts were most evenly distributed, it kept better, it gave better results with poor negatives. The chief disadvantage was that there was sometimes difficulty in getting even tones, especially when the print contained sharp gradations from light to shade. The methods of toning and fixing were then described. To secure even toning it was essential to thoroughly wash the print until all milkiness had disappeared from the water if separate toning and fixing baths were used. Any toning bath would do, though the Paget Co. preferred the sulphocyanide bath. In using this bath the points to be observed were: Not to exceed the quantity of sulphocyanide given in the formula, and to give the requisite quantity of gold for the amount of paper ($1\frac{1}{2}$ to 2 gr. per sheet); to place all the prints in the bath as quickly as possible, and to keep them in motion; to judge the colour of the image entirely by transmitted light, and not to stop the toning so long as the slightest trace of yellow was visible in the shadows. The prints must be thoroughly washed between toning and fixing, and no trace of hypo must be allowed to get into the washing water, as hypo in small quantities caused brown stains. For the combined toning and fixing bath the following simple formula was recommended: Water, $4\frac{1}{2}$ oz.; chl. gold, 1 gr.; acetate of lead, 20 gr.; hypo, 380 gr. It was most important that the bath should not get acid, and to prevent this precipitated chalk or whiting should be shaken up with it. In no circumstances should gold be added to the bath after toning had started. The methods of obtaining enamelled and matt surfaces were explained, and a number of prints, opals, and lantern-slides on Paget papers and plates were shown. The meeting then adjourned to the dark-room, where Mr. Fry demonstrated the development of a partially-printed print, which is a speciality of the Paget Co., and afterwards toned the print, together with another which had been fully printed in the usual way. He explained that development must stop considerably short of the required density, as the developed image, unlike the printed-out one, gained greatly in depth in the toning bath.

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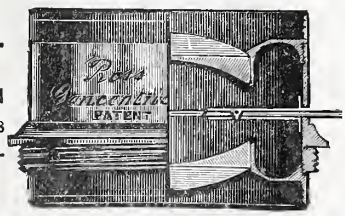
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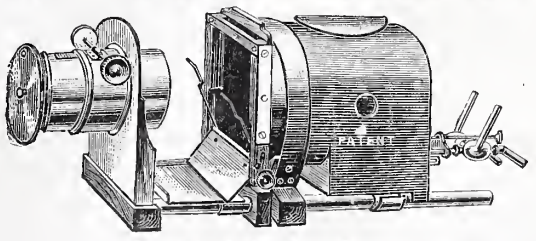
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On Nikko Paper.*

By J. H. Baldock, F.C.S.

This development paper, as distinguished from the printing-out paper, has recently been introduced by the Eastman Company, and we propose to-night to lay before the members of the Club our experiences in the development and toning of Nikko paper, so far as they have gone up to the present time.

Although the ferrous-oxalate development is the only one referred to in the instructions issued with this paper, yet it is stated that any of the other developers may be used; and, if time permits, we shall endeavour to show you the results obtained with the following developer, *i.e.*, hydroquinone, amidol, metol, and glycin, any of which may be used, the chief difference in the results obtained being the *colour* of the developed image.

Following up an opinion we have before expressed, and which has been endorsed by the editor of the *British Journal of Photography*, we again reiterate the statement that development formulæ ought always to give the quantities of each ingredient to each ounce of developer used. The want of such information was abundantly proved by the value set on the tables compiled with so much care and trouble by Messrs. Clark and Ferrero, and yet we find formulæ still being published to make anything from a pint to a gallon of developer, and, on endeavouring to reduce these to ounce quantities some curious and interesting fractions occur, which go far to throw discredit on the published formulæ.

The ferrous-oxalate and hydroquinone developers are probably sufficiently well known; but for those who wish to try the newer developer, we have reduced the quantities, as given in the formulæ sent out by the manufacturers to ounce proportions, as follows:—

Amidol.

Pure sodium sulphite	21 gr.
Distilled water	1 oz.
Amidol crystals	2 gr.

Dissolve the sulphite in the water, and add the amidol. As the latter is very soluble, it may, like pyro, be used dry at the moment the developer is wanted.

Metol Soda.

A.

Distilled water	1 oz.
Metol	6½ gr.
Dissolve and add pure sodium sulphite	65 „

B.

Distilled water	1 oz
Soda crystals	54 gr.

Dissolve.

Metol Potash.

A.

Distilled water	1 oz.
Metol	4½ gr.
Dissolve, and add pure sodium sulphite	45 „

B.

Distilled water	1 oz.
Carbonate of potash	45 gr.

Metol Stock Solution.

Distilled water	1 oz.
Metol	6½ gr.
Dissolve, and add pure sodium sulphite	65 „
Soda crystals	54 „

Glycin.

A.

Glycin	17 gr.
Carbonate potash	66 „
Pure sodium sulphite	51 „
Distilled water	1 oz.

Dissolve.

B.

Carbonate potash	43 gr.
Distilled water	1 oz.

For use, mix one part of A with two parts of B.

These solutions are to be mixed in varied proportions, and sometimes diluted with water, according to the instructions issued with each developer.

We will now proceed to expose and develop a piece of Nikko paper with each of these developers, taking them in the order given, when we shall find that the ferrous-oxalate gives from a soft grey to a velvety black; hydroquinone more or less of a black; while the newer developers appear to give beautifully soft pictures of a colour intermediate between these two. Some prints we have previously prepared will illustrate this, and another print will show the effect produced by squeegeeing on to a pulp slab previously prepared with spermaceti dissolved in benzoline, and which we much prefer to talc.

The exposures, which were all made at a distance of three feet from a gas flame, varied from thirty to sixty seconds according to the density of the negative, and the usual device of shading some parts of the negatives, where thin, during exposure was adopted.

Nikko paper appears to give a great latitude in exposure, and to develop up slowly and vigopously, and shows no sign of fogging or staining with any of the developers we have tried.

Having developed the Nikko print, we can, if the colour is not agreeable or we wish to alter it, resort to toning. And for this purpose we have used two solutions, the result of which we shall demonstrate to you. (1) There is the now well-known acid uranium toner first suggested by Mr. Weir Brown, which gives very warm tones, but which do not appear to wash out, as they do in the case of bromide paper; this may be due either to a difference in the emulsion, or to the fact the uranium toning with Nikko paper is much slower than it is with bromide paper. Examples of this we show you.

(2) The sulphur-toning formula issued by the Eastman Company, which, as you will see by the example before you, gives nice warm sepia tones. In using this process, however, two precautions are necessary, *i.e*, (1) Not to use the bath before it has been made *at least* twenty-four hours; (2) to develop darker than the toned print is required to be. If these conditions are not observed, the result will be as in the print before you—it will be almost bleached out of existence. Another point in connection with this toner is that it should be kept warm—that is, from 100 deg. to 120 deg. Fahr.—during the toning process, as a print that was allowed to remain in it cold *all night* showed no sign of toning the next morning.

We have now laid before you some of the methods of treating Nikko paper, and we may say, in conclusion, that we believe there is a future for this paper, as it appears to be very amenable to various kinds of treatment.

* Croydon Microscopical and Natural History Club.

Wet Collodion for Beginners.

By Charles W. Gamble.

II.

Coming now to the practical working of wet collodion, we will first give the apparatus and materials required. It is always an advantage, when starting any new process, to carefully make out a list of what will actually be required for the working of the same. In this way much time is saved, the things can all be got together, and the work will be more likely to be done, as all work should be done, "decently and in order."

Many of the articles mentioned the photographer will have in his possession; the others may readily be procured at a comparatively small cost.

Apparatus.—Camera, and lens with diaphragms; single dark slide and inner frames with *silver* wire corners; camera stand.

One 8½ by 6½ new deep porcelain (or preferably "granitine") dish on stand, with cover arranged as will be shown in our next. The stand and cover to be varnished inside and out with Bates' black varnish. For use in sensitizing.

One 20 oz. bottle, for silver bath, with glass tap and stopper.

One 12 by 10 (or larger) porcelain dish, deep or shallow. An old dish will do here.

One quarter-plate porcelain dish.

One dish for washing negatives.

One small drawing board, say 12 by 10, varnished with Bates varnish, and covered on one side with plain felt (tacked down).

Bottles.—One stoppered 1½ Winchester: one 20 oz., five 10 oz., one 2 oz. Plain, with well-fitting, sound corks: one 20 oz., three 10 oz.

Funnels.—Two 3 in., one 4 in.

Beakers.—One 3 oz. and one 2 oz.; *squat* form glass beakers, *without* lip. One 10 oz. beaker.

One small dropping bottle.

One common nail brush.

Half a quire of *pure* bibulous paper, which must be kept quite clean.

One common sponge.

One ounce prepared (purified) cotton wool. This may be procured from any good pharmaceutical chemist, and must be kept in a clean box or bottle.

One small plate-lifting hook of *silver*,* which should be mounted in a small wooden handle. The handle to be varnished.

* A vulcanite hook is sometimes used instead of silver, but this is not recommended.

Two pneumatic holders preferably of different shapes, so as to be readily distinguished.

Pair of scales and set of weights, preferably with glass pans.

Two dozen pieces of best sheet glass cut 3¼ by 4¼.

Two empty dry-plate boxes, quarter-plate, quite clean. One flat camel-hair dusting brush.

Small pieces of pumice-stone, say 1 oz.

A rough wooden spatule, say 12 in. long.

A dark-room lamp with one thickness of orange glass or a thickness of golden fabric between two pieces of plain sheet glass.

A wooden box with lid lined with pure bibulous paper in which to dry the glass plates after receiving substratum (see figure.).

A few clean calico dusters.

Two glass rods.

One quart jug, kept only for the work.

CHEMICALS.

Potassium bichromate, commercial	2 oz.
*Sulphuric acid, strong	2 ,,
Distilled water	½ gall.
*Silver nitrate re-crystallised	3 oz.
*Nitric acid, pure	1 ,,
Potassium iodide	¼ ,,
Iron protosulphate	4 ,,
*Acetic acid, glacial	2 ,,
*Alcohol, pure (free from methyl solvents)	2 ,,
Pyrogallol	⅓ ,,
Citric acid	1 ,,
Potassium bromide	1 ,,
Mercuric chloride	1 ,,
Potassium cyanide, *recrystallised*	1 ,,
Potassium ferricyanide	½ ,,
Sodium thiosulphate, stock.	
Sheet gelatine, best	2 ,,
Ammonia, ·88	1 ,,
Orange shellac	¾ ,,
Methylated spirit, best	10 ,,

10cz. of collodion, for "copying" with.

Iodiser separate. *To be kept in a cool and dry place.*

The student should be careful to procure at the outset all chemicals (except when otherwise mentioned) in a pure condition, as by doing so he will save himself much waste of time and disappointment. The liquids (with the exception of the methylated spirit), and the solids marked * should be in stoppered bottles. The gelatine should be kept in clean paper, and the remainder of the chemicals in bottles with well-fitting corks.

The student's first work (having got all the apparatus and materials together) will be to clean and prepare the pieces of glass ready for receiving their coating of collodion. He will proceed as follows:—Taking the sheet-glass as it comes from the dealer's, he must carefully examine each piece and reject all that have any scratches, blisters, or other flaws. The edges of the glass plates being sharp, it is a wise precaution to grind the same off, either by rubbing with a sharp corundum file, or by the more simple plan of drawing the edge of one piece across the edge of another. When this has been done, each piece of glass is carefully wiped, to get rid of any adherent glass dust, and the pieces are stood aside. They are then ready for cleansing, which is a most important stage of the work. There are several methods of cleaning glass for wet-collodion work, and the writer will give the one which he has found in practice to be the simplest and most effectual. It is a method which is used in one of the largest establishments in London, where wet-collodion work forms a large and important item of the daily routine. We require potassium bichromate, sulphuric acid, and water, the old porcelain dish mentioned in the list, a glass rod, the felt-covered board, the nail-brush, and the spatula of wood. A solution is prepared according to the following formula:—

Potassium bichromate	1 oz.
Sulphuric acid, strong	1 ,,
Water	20 ,,

The potassium bichromate is dissolved in the water, which should be cold, and when solution is complete it is poured into the dish and the sulphuric acid is added in quantities of *one fluid drachm* at a time, stirring after each addition with the glass rod. When the whole of the acid is added the solution is ready for use. The student is warned that it is a strong corrosive, and he should be careful to avoid as much as possible any contact with his skin. It will also quickly ruin any fabric it touches. When not in use the solution should be poured into the Winchester bottle and carefully labelled "Glass Cleaning Solution—Poison," and kept in a safe place.†

The glass plates are now taken and placed one by one in the solution just prepared, taking care to see that each piece is fully covered and that they do not scratch each other. When this has been done, the dish is covered over with a piece of board and allowed to stand aside for two hours, at the end of which period they are ready for the next operation. After thorough cleansing they are to be given a substratum of gelatine, and we now proceed to prepare the necessary solution, the composition of which is given below:—

Sheet gelatine	35 gr.
Water, distilled	30 oz.
Ammonia ·88	1 drm.(fluid).

The gelatine is placed in the quart jug and is quickly rinsed with water to free it from dust, and then drained. It is then allowed to swell for an hour in half the above-given quantity of water. If the end of the jug is placed in a basin which has just been filled with boiling water, on stirring the contents of the jug with a glass rod the gelatine will soon dissolve, and when solution is complete the jug is removed from the basin and the remaining quantity of distilled water is added to the gelatine solution. The jug is placed now in cold water. The contents will be quickly cooled, and so time saved. Add now the ammonia, and the solution is ready for filtration, which must be carefully done. Wash out the 30-oz. bottle and funnel, and carefully place in the neck of the latter a pledget of cotton wool firm but not too tight. Place the tube of the funnel in the neck of bottle and pour into it some of the gelatine solution. When this has run through, return solution to the jug, and now refill the funnel, keeping it always full, as filtration is then quicker. If the solution runs through very slowly, either the cotton wool is too tight or the neck of the funnel fits the bottle so closely that the air cannot make its way out. In the first case the remedy is to recharge the funnel with wool—not so tightly, and in the second to insert a piece of paper between the neck of the bottle and the tube of the funnel. When the whole of the solution is filtered, wash out the jug carefully and pour into it the filtered solution, wash out the bottle, recharge the funnel, and refilter "*substratum*" again. When this has been done it is ready for use. The solution should be prepared each time it is required. Wash now at once the jug, funnel, and rod, dry, and put away.

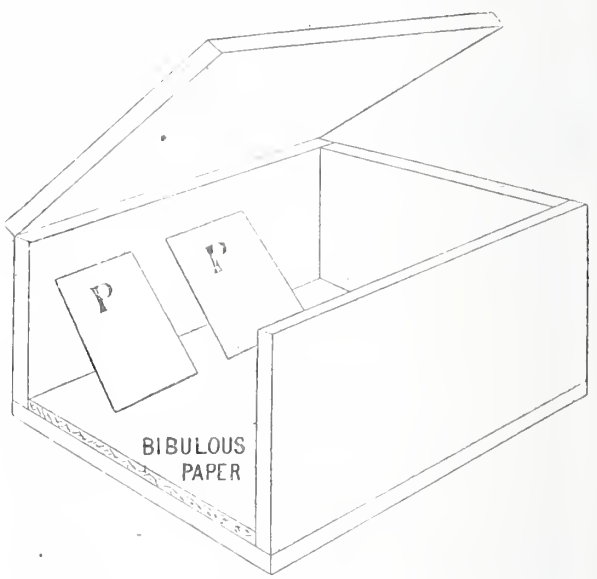


FIG. 1.

We now return to our dish containing the glass. Raise a plate by means of the spatula, and allow the same to drain, and then rinse with plain water, either from a tap or jug.

Place the rinsed plate on the felt-covered board, and scrub well with the nail-brush. Now turn the plate over and scrub the other side, and afterwards the edges. *The edges are not to be neglected.* Now rinse the plate *very thoroughly* with water and place in a dish of clean water. Treat all the plates in this way, and then pour the bichromate solution into the bottle. Wash the dish and the spatula, and stand aside for use next time.

We must now get ready our simple drying box (fig. 1). Any ordinary wooden box with lid will answer, which is capable of holding a couple of dozen plates reared on end. This is dried by the fire, and is then lined throughout with pure bibulous paper, the paper being fixed to the inside with drawing pins. Only pure bibulous paper must be used, and at the bottom of the box there should be at least two thicknesses. If the box is not large enough to allow of the plates being stacked at the side, clean bottles can be stood in the centre, and the plates allowed to rest against them with a strip of bibulous paper between.

† The writer desires strongly to advise the student to exercise the greatest possible care in storing out of harm's way all dangerous and poisonous solutions, and to avoid the unsafe practice of using for his work any domestic vessel.

The box being ready and the glass washed, we can now proceed to the next step. Remove the plate from the dish of water and rinse under the tap and drain. Support the glass level on the finger tips and flow over the surface a small quantity of the "*substratum*" solution. Drain away and flow again twice, draining each time. Now rear the plate on end in the box, the *coated side resting against the side of the box*, treat all the glasses in the same way, and then close the box up. The plates will dry in about an hour in a warm room if the box is dry. Have ready twelve pieces of bibulous paper cut to the size of the plates. When the plates are dry, remove from the box and clean away with a damp cloth all traces of gelatine from the uncoated side and the edges of the glass, taking care not to finger the other surface. Now place each pair with their coated sides in contact, nothing being between, and place in plate boxes, each pair being separated by a slip of the paper which has been previously cut. The drying box is put away and kept clean and free from dust.

In the next article we shall describe the preparation of the "bath" and other solutions required.

Societies' Notes.

HARRINGAY AND FINSBURY PARK.—This society have a few vacancies for members, ladies included. Early application of intending members should be made to C. N. Frith, 91, Burgoyne Road, Harringay.

KINGSTON-ON-THAMES.—At a preliminary meeting held October 21st it was decided to form a photographic society for Kingston and neighbourhood, Rev. G. I. Swinnerton in the chair. The following resolutions were proposed, seconded, and carried unanimously: (1) That the society be opened to all interested in photography, whether ladies or gentlemen. (2) That all gentlemen then present form a preliminary committee to undertake the formation of the society. (3) That the proposed subscription shall not exceed half a guinea. (4) That a sub-committee consisting of Rev. A. Dunne (Kingston), Mr. W. Price (Hampton Wick), Mr. W. Robertson (Surbiton), be formed to draw up a prospectus of the society. (5) That Dr. Finny (Kingston Hill) shall act as Hon. Secretary *pro tem.* (6) That the committee meet again on Saturday, October 28th, at Kenlis, Queen's Road, at 8.30 p.m., to supervise the prospectus. The following gentlemen being present, constituted the preliminary committee: Rev. G. I. Swinnerton, Rev. A. E. Dunne, Messrs. A. Brown, F.R.G.S., F. Drewett, F. Foster, A. E. Le Marchand, W. E. Price, W. M. Robertson, J. E. Wilkinson, J. W. Wilson, G Wright, Dr. Finny, Councillor Youldon.

THE Leytonstone Camera Club on 21st inst. celebrated the conclusion of an important undertaking. They have built themselves new headquarters at the Assembly Rooms, and the new hall and studio were formally opened at the gathering which took place. The premises, which have been erected over the passage leading to the Assembly Rooms, comprise a hall of moderate dimensions, but quite sufficient for the objects of the society; it is 25 ft. long by 16 ft. wide; also a chemical store-room, which contains accommodation for the library of the club; and the indispensable darkroom, fitted with developing sink, and gas and water appliances. The studio is lighted on its norhern outlook by a considerable expanse of glass on the roof and side elevation. The premises are constructed of iron, lined with matched-boarding, the walls being decorated with a dado. The walls of the hall at the inaugural meeting were relieved with specimens of the members' productions. Proceedings were opened at seven o'clock with a cold collation, provided by Mr. Chapman. The tables were tastefully and prettily laid out and decorated, and the repast, of a light and elegant character, was admirably served. Music accompanied the collation; it was dispensed by the Veronese Quartette, which those present at the photographic exhibition last year will remember with pleasure. In course of the evening the quartette performed many admirable pieces, which were heard with delight by all in attendance.

A MEETING of amateur photographers resident in the Edinburgh district was held on 19th October, in the Philosophical Institution, for the purpose of forming a society exclusively for amateurs. There is no such open society at present in Edinburgh, and it was considered that its formation would be a distinct advantage to what is now a very considerable class in the community. A small committee was appointed to draft rules, and report to a meeting to be held on Monday, 6th November. It is proposed to call the society the Midlothian Camera Club, a private society of same name being now disorganised.

OXFORD UNIVERSITY.—Mr. A. Eglington, B.A., Lincoln College, has asked us again to state that he is no longer Hon. Secretary of the club, but has been succeeded by the Hon. G. L. Parsons, Balliol College, and any communications not addressed to Balliol College are liable to be seriously mislaid.

Societies' Meetings.

Aston.—On 19th inst. an interesting paper was delivered by Mr. Cracroft, who was most happy in his description of the district around "Cheddar," and the hints as to directions to take, lenses required, and other "tips" were well received by one of the best attended meetings of the session. The lecture was illustrated by some fine mounted prints, and was rather novel after so good a run of lantern views. At the subsequent Committee, the Secretary informed the members present that the General Committee, to whom the hall belonged, had graciously granted the free use of hall and rooms on the first floor for the purpose of the exhibition on March 1st, 2nd, and 3rd, which the Aston Photographic Society intend to organise, and which will be rather novel in its way, including photographic, natural history, and kindred manual work. There will be the usual awards, medals, and diplomas, and some well-known gentlemen are expected to act as judges.

Brixton and Clapham.—A meeting was held on Oct. 17th, the chair being taken by the President, Dr. Reynolds, F.R.G.S. At the conclusion of the ordinary business, the President read a paper on the "Diazotype Process," *i.e.*, printing in aniline dyes. About 1890 a new dye named Primuline, was discovered by Mr. Green, of the firm of Green, Cross, and Bevan. This dye, which is very soluble in water and yellow in colour, has a strong affinity for all kinds of vegetable fibre, and so strong is this affinity that it is only necessary to soak the fibre for a few moments in a dilute solution of the dye and a perfectly fixed primrose colour is the result. After the material is dyed it is immersed in a bath of nitrous acid, and a surface is then obtained which is of a deep orange colour and very sensitive to light; and if this surface is exposed to the action of sunlight or a strong light, the deep orange colour bleaches to a pale primrose, and after washing in water remains at this tint. If, however, before exposing to light a portion of the surface is protected by covering with, say, a fern leaf or a dense carbon positive, it will be found that the portions of the surface so protected are not bleached but remain of a deep orange colour, which they had upon removal from the nitrous acid bath. If now an alkaline solution of quarter to half per cent. of, say, betanaphthol is applied, the portions unacted upon by light will become of a splendidly red colour, the parts acted upon remaining simply a pale primrose colour, requiring only to be washed and dried. Other aniline derivatives applied as developers give rise to other colours, *e.g.*, blue, orange, brown, yellow, maroon. The process is admirably suited for ladies' use, because such articles as tablecloth, curtains, coverlets, panels for doors, mantelboards, etc., of a most ornamental kind can be readily produced. It is only necessary to print in sunlight for a few minutes. It must, however, be remembered that this is a positive process, consequently a positive must always be used to print from. If a material such as a layer of albumen stained with primuline is dried, heated to 212 deg, and then developed with pyrogallic acid and sulphite, a deep, clear sepia stain is produced on a pale yellow ground, and this will bear almost any amount of amplification; and if a sensitive surface could be obtained quick enough for camera exposure the negative could be enlarged to any extent without showing a trace of the structure of the substance on which the actinic impression was produced. This would indeed be perfection in photography for astronomical or micro-photographic types. A practical demonstration which followed proved conclusively the simplicity of the process, and the members present were delighted with the results produced. On being asked by the President, Mr. Cross, of the firm referred to, then kindly gave a thoroughly detailed account of the chemistry of the process, pointing out also the cheapness and uniform success of the results to be produced. His firm would be ever ready to assist those desirous of taking up this beautiful process.

Croydon (Camera Club).—18th inst. Matthews's portable lantern was shown and described. The following members showed slides: —Messrs. Ryan, Paice, Packham, Corden, and White.

Durham.—Lantern entertainment on 18th inst., Rev. H. E. Fox, M.A., President, in the chair. There was a large attendance of members and friends. Mrs. W. W. Stainthorpe, of Saltburn, gave her lecture of "A Holiday in Holland." Mrs. Stainthorpe, who was quite at home with her subject, spoke of the characteristics of the Dutch people, their mode of dress, religion, habits, etc.

Eastbourne.—A good muster of members gathered to hear Mr. Fry upon Paget printing-out processes, and especially to see the new and interesting process of development of printing-out papers by alkaline development. After the usual formal business of the society was concluded, the chairman introduced the lecturer to the audience, and said that he was sure that the interesting nature of the demonstration would ensure their attention. Mr. Fry then gave a short lecture upon the salient points of and advantages of print-

ing-out paper, and concluded by saying that he believed there was a great future for the Paget Company's new paper, on the grounds of its great perfection of coating, the thinness and firmness of the gelatine coating, and its potentiality for development, which latter quality would be found to distinguish it from any previous manufacture. Mr. Fry then demonstrated the development of a partially printed proof upon Paget paper. He recommended the use of a 10 per cent. bromide solution (or even a stronger one) for the preliminary bath, pointing out that much of the ultimate success of development depended upon a thorough "bromising" of the soluble silver salts in the paper. After carefully washing out the bromide solution, which although not absolutely necessary was beneficial, he recommended one of the following developers:—

A.

Hydrokinone	8 gr.
Sulphite soda	10 „
Potass bromide	1 „
Water	1 oz.

B.

Soda carbonate	10 gr.
Water	1 oz.

C.

Ammonium bromide	20 gr.
Ammonium carbonate	20 „
Water	1 oz.

Or—

Metol (Andresen)	10 gr.
Carbonate potass	20 „
Soda sulphite	20 „
Bromide potass	10 „
Carbonate ammonium	10 „
Water	8 oz.

The hydrokinone solution should be used in equal parts. The metol, which he preferred, is a one-solution developer. After showing the development by candle light, which was recommended, Mr. Fry said care was required not to over-develop, for in judging a red image by a yellow light it was easy to under-estimate the contrast. It is necessary to wash carefully between development and toning, and Mr. Fry preferred a combined bath, but said that his principals preferred separate toning and fixing. There was, however, nothing abnormal in the after processes. The members were struck with the facility with which the various simple operations were effected, and the complete control over the result. The finished print was perfectly good in a technical sense, and indistinguishable from a fully printed-out picture.

Fairfield.—A meeting was held on 13th inst., the President, Mr. Mallabar, in the chair. The President congratulated the club on having secured such fine rooms, and hoped that it would lead to larger attendances and many new members. He then called on Mr. S. H. I. Smith to give a short practical demonstration on the new Hill-Norris collodion lantern plates. The chief points about these plates are the rapidity with which they can be worked. Mr. Smith exposed, developed, fixed, and mounted a lantern slide and had it exhibited in the lantern within ten minutes. The President then requested Mr. H. Holt to show his splendid series of Ceylon slides. He also exhibited some of his English studies, including many prize slides. Several other members exhibited slides which added much to the evening's success. The pictures sent in for the Presentation Print Competition were exhibited at this meeting, and a ballot held for the best picture. After an excitingly close ballot, Mr. Forrest was declared winner with a beautiful study of the "Stepping Stones, Bettws-y-Coed." A silver medal was the prize.

Glasgow and West of Scotland.—A meeting was held on 16th inst., Mr. Wm. J. B. Halley, President, in the chair. After the formal business was disposed of, the President addressed the meeting, referring briefly to the satisfactory position of the Association and the prospects of the session now opening. Mr. Stewart Smith, Vice-President, read a paper on "Enlarging," and exhibited his apparatus suitable for daylight or limelight. At the conclusion of his paper he made some exposures by limelight, and showed how to print-in a sky from a separate negative. Arrangements for the annual exhibition of members' work were discussed, the opening day being fixed for December 22nd. In connection with this exhibition medals will be offered for sets of lantern slides with suitable lecturettes, which must be delivered before the Association during the session.

Leeds (Y.M.C.A.).—The members met on 20th inst., Mr. T. R. Thompson in the chair. Mr. H. Eastwood, Vice-President, gave a very interesting and instructive demonstration on lantern-slide making by contact printing. After describing the various processes and formulæ, the lecturer made several slides from negatives brought by some of the company. A discussion on the subject was afterwards taken part in by several of the members.

Lewes.—A meeting was held on 17th inst. The President (Councillor Wightman) was in the chair. A demonstration of the process of preparing transparencies for the magic-lantern was given by Mr. S. Herbert Fry, who is lecturing on behalf of the Paget Plate Company, of Watford, and demonstrating the use of their manufactures. Some beautiful photographs, printed upon the company's new printing-out paper, were then passed round. In connection with this method, the Paget Company claim to have made a great advance, in that their new printing papers can be partially printed and then completed by development.

Nottingham.—A meeting was held under the presidency of Mr. W. J. Abel, B.A. The Chairman introduced Mr. T. K. Gordon, who attended by special request of the Committee, to give an exhibition of his slides of the "River Trent," dealing with it from its source to its termination in the Humber. The exhibition was very interesting, bringing to the notice of the audience places seldom visited or seen both in the county and out of it. Slides were also shown kindly lent by Messrs. Holbrook, Fewkes, Cooper, and Hartley.

Putney.—On 19th inst., Dr. J. F. Farrar in the chair, Mr. Baldwin, of the Eastman Company, gave a lecture and demonstration on Solio paper. In the course of his remarks Mr. Baldwin said the best results were probably obtained from negatives with a tendency to softness, but good prints could also be made from negatives suitable for any of the other usual processes, as well as from some with which this was not the case. The paper has considerable keeping qualities, but, as with all commercial printing papers, it was advisable to use it when fairly fresh. Damp was a danger to be carefully avoided, and for this purpose the paper should be kept in closed tubes or boxes, and an india-rubber pad should be placed next to it in the printing-frame. Printing would be found to proceed rapidly, generally twice as fast as when using albumenised paper, and it would not be found necessary to the depth required by this process. The printing should be regulated with a regard to the subsequent treatment, rather more deeply for prints to be toned in the combined bath, or to be finished with a glossy surface, than for those to be toned and fixed in separate baths, or to be finished with a matt surface. The Solio being an emulsion paper, there was no danger of it staining the negatives when placed on them in the printing-frame, as was not infrequently the case with other papers having free silver on the surface. Reference was then made to the various toning formulæ given in the instructions issued with the paper, and their action and characteristics explained. These baths were, after careful experiments, recommended by the Company; but the paper could also be successfully treated with others, and no doubt many workers would find out for themselves a bath which would readily and with certainty give them the tones which they most admired. With the combined toning and fixing bath no preliminary washing was necessary, and it was also in other respects convenient, but toning beyond the brown should not be attempted, as a greenish tinge would be the result. He recommended that this bath should be used once only, a fresh bath being made for each batch of prints. When working with the separate baths, a preliminary washing was necessary, and upon its thoroughness depended largely the success of the subsequent treatment. Temperature had great influence on the toning bath, 40 to 50 deg. had been found advantageous, and in hot weather it was desirable to cool the bath with ice. The use of alum was also recommended for hardening the film. After toning, the prints should be thoroughly washed before being passed into the fixing bath. This should be made up in accordance with the formula, the sulphite of soda helping to preserve the purity of the whites. The washing after fixing should be continued in running water for about an hour, and where running water was not available, in about twenty changes. The prints could be finished in various ways; if simply dried and mounted they could be burnished, care being taken that the temperature of the burnisher should not exceed 170 deg.; for glossy surface the prints should be squeegeed on to carefully cleaned plate-glass or ferrotype plates; and for matt surface on to finely-ground glass. In either case it might be considered desirable to back the prints with suitable paper to preserve the gloss or matt when mounting. Gelatine was, perhaps, the best mountant; any containing india-rubber in any form or degree should be shunned for this paper. Mr. Baldwin went fully into all details, and ably answered a large number of questions addressed to him by the members, who throughout followed his lecture and demonstration with interest.

Richmond (Camera Club).—The annual general meeting was held on the 16th inst., Mr. C. H. Davis in the chair, when the report and balance-sheet for the year ended August 31st were submitted and adopted; and the following officers were elected for the current year: President, Mr. Cembrano; Hon. Secretary, Mr. Ennis; Hon. Treasurer, Mr. Davis; Committee, Messrs. Alabaster (Lanternist), Ardaseer (Librarian), Gibson, Huddy, Neville, and Williams.

Settle (Photographic and Lantern Society).—The first meeting of the winter session was held on 20th inst., when Mr. D. R. Smith, M.A., President of the Society, gave an admirable lecture on

"Venice," illustrated with lantern slides from negatives taken by him during a recent visit. Messrs. R. W. Thomas and Co., Ltd., kindly sent a series of photographs from negatives on Sandell plates and films, which were much admired.

SOCIETIES' FIXTURES.

Oct. 26—TOOTING CAMERA CLUB.—"Artistic Photography," Mr. Berger.
„ 26—LIVERPOOL A.P. ASSOC.—Lantern Lecture, "By River and Hill," by Mr. Adolph W. Beer.
„ 26—DUBLIN CAMERA CLUB.—Competition of Members' Prints.
„ 26—HULL.—"Paget Prize Lantern Plates," etc., Demonstration by Mr. S. Herbert Fry.
„ 26—LEEDS.—"Flash Light Photography," by Mr. A. Homberg.
„ 27—CROYDON MICROSCOPICAL AND NATURAL HISTORY CLUB.—Technical Evening, "Suggestions for Mounting Prints," etc.
„ 27—SUTTON COLDFIELD.—"Hints on General Working," by E. C. Middleton.
Oct. 28—HUDDERSFIELD.—"The Geology of Huddersfield," by C. H. Bould, with Lantern Illustrations.
„ 28—LEYTONSTONE CAMERA CLUB.—Members' Lantern. Evening.
„ 28—HEXHAM.—Lantern Evening: 1893 Prize Slides and Members' Slides.
„ 30—RICHMOND.—"Elementary Optics as applied to Photography."
Nov. 1—CROYDON CAMERA CLUB.—"Harmonising Harsh Negatives," by J. Macintosh, and "A Chat on Lenses," by G. R. White.
„ 1—PHOTOGRAPHIC CLUB.—Annual General Meeting.
„ 2—ASTON.—"Some 'Why's' of Development Answered," by F. W. Pilditch.
„ 2—LIVERPOOL.—"Lantern Slides Reduction with Magnesium Ribbon," also "Toning Chloride Slides," by Mr. G. A. Carruthers. "Lantern Slide Reduction by Daylight," by Mr. H. Holt.
„ 2—HULL.—"Photographic Processes for Beginners," by Rev. G. A. Coleman.
„ 2—LEEDS Y.M.C.A.—Mr. C. C. Vevers' Illustrated Lecture on "Photographic Dodges."

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6166. **"Nameless" Plates.**—Can any one tell me where I can procure above ?—KROC.

6157. **Print Washer.**—Can any one recommend a washer in which the prints will keep in motion. I have tried several, but in all the prints fall on the bottom and get injured by the perforated zinc ?—K.

QUERIES UNANSWERED

Aug. 25.—Nos. 6155, 6157.
Sept. 1.—Nos. 6158, 6159, 6160.
„ 22.—No. 6161.
„ 29.—No. 6162.
Oct. 6.—No. 6163.
„ 13.—No. 6164.

ANSWERS.

6166. **Outdoor Work.**—I do not think your R.R. lens is the cause of your non-success with landscapes; if you stop down to about *f*/16 it should be all right. (I once experienced something of the same kind with a single landscape lens.) It seems easier to estimate the exposure for groups, etc., than for landscapes, probably because the former are lighted more evenly. Very likely your difficulty is in the development. Landscapes usually require developing with a more restrained developer than portraits—*i.e.*, suppose you are using pyro-soda, for instance; you should increase the quantity of pyro and bromide, and not add the full amount of soda all at once, begin, say, with half and develop slowly; or if using eikonogen or one of the new developers, you can increase the bromide and reduce the alkali. It does not do to dilute the developer too much with water, as especially with some plates it gives flat negatives. If you got a box of quarter-plates of the brand you generally use and made a few experiments, take a plate and expose on a landscape—it need not be artistic—and draw out the slide of the shutter about an inch at a time, so as to give four exposures on one plate, say, with *f*/16, in a good diffused light, two, four, six, and eight seconds. Of course, this depends on the rapidity of the plate and strength of developer. However, develop in your usual manner, and you will see which exposure is correct, then give half a dozen or so exactly the same exposure on the same view, one after the other, as soon as possible. Then develop, altering the quantities of pyro and bromide, or what developer you use, using different quantities for each plate. A dozen or so plates used in this way (although tedious) are well worth the trouble. Lyonel Clark's book on "Development," by Hazell, Watson, and Viney, Ld., 1s., is the best book I know of on the subject, and I advise you to get it. If I can give you any information that will be of use to you, shall be glad to do so; but your inquiry as it stands is so vague that I don't quite know what your difficulty is. If this is not what you want, please give further particulars. If you like to write me, the Editor has my address.—J. W. S.

6167. **Box for Instantograph.**—I have made three boxes in my time, each (I thought) an advance on its predecessor, and have discarded them all. I now work with my camera exposed, the wood and brass is enamelled black, and a piece of dull American cloth thrown over as a disguise. When the light is not at its best I always carry a tripod. I find it is very unsatisfactory taking snapshots at such times; much better use the "legs" and give a time exposure.—GEO. LYON.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOTO.

T. F. BUNCE asks what length of magnesium ribbon should be burnt for a portrait with lens working at *f*/8? Should a screen of tissue paper be used? And what plates? It is advisable always to use a diffusing screen, and the light should be at least 6 ft. from the ground; a pair of steps will do to stand on. Use the most rapid plates you can get, and burn 2 ft. on one side of the sitter and 1 ft. on the other. We shall shortly give directions in our leaders on this subject. The burning need not be simultaneous, provided the sitter does not move, and the lamps should be about 3 ft. from the camera. (2) What are the best plates to take machinery where length of exposure is no object? We should recommend rapid plates, which would have less tendency to give hard contrasts. (3) He also asks for a remedy for pink tones on chloride papers. We can only refer to our answer a fortnight ago, and the letter in our last issue. We hope to make some experiments on the subject shortly. We are pleased to see visitors and make no charge. We can find no prints from you.

H. OWEN asks what is the correct quantity of soda and potash accelerator to use? The formula referred to is our old favourite, soda, potash, and ferrocyanide. The normal quantity is ½ oz. to a half-plate, or 1½ oz. of developer, but it is advisable to always commence gradually and add only one-third or one-half of this quantity at first, being in no hurry about further additions. At first no bromide need be used unless over-exposure is feared, but as the subsequent additions are made about ¼ gr. of bromide to every ounce of developer should be added. The great thing is to give it time.

OLE BILL.—Many thanks for your letter. We have hardly decided yet what to do, but we are quietly thinking the matter over and digesting all the letters sent us. This correspondent asks for a formula for giving blue-black tones to chloride and silver prints. The easiest for chloride paper is the bicarbonate bath—

Bicarbonate of soda	90 gr.
Chloride of gold	2 „
Distilled water	12 oz.

This bath will not keep. For silver paper undoubtedly the old chloride of lime bath—

Chloride of gold	1 gr.
Chloride of lime	5 „
Chalk	20 „
Water	8 oz.

Mix and allow to stand for half an hour, shaking occasionally, then decant or filter. The prints should not be quite free from silver and should be over-printed somewhat. This bath will keep as long as it smells of chlorine, is active, and fresh gold and lime may be added to it.

CRADOC.—We are always glad to lend slides to anybody if they will pay carriage. Let us know when you want them.

OMEGA.—Very many thanks for your kindly letter. We can partly sympathise with you if you have to take kittens and puppies. There is only one thing worse, and that is babies. We shall be very pleased to see any of your early struggles, and may be able to give you a helping hint or two which may save you some wasted plates and trouble.

PHOTATOR.—(1) Good; but the white expanse of sky wants breaking up, and you might have put the horse and cart more central and not spoilt it. (2) Here again the white sky is painful. (3) Camera not held quite straight. (4) Ditto. (5) Too much foreground and not enough sky; negative wants intensifying. (6) Too much foreground. (7) Ditto. (8) Just a little off the foreground will improve matters. Considering the short time you have had your camera you are turning out very good work, only you should learn exactly how near your camera will take objects in focus, and work closer to them at present. What should be the principal objects are too far off as a rule.

BETA has been using Beach's developer, and now hears that metabisulphite is better than sulphite of soda, and wants to know how much metabisulphite will replace the sulphite. Practically 1 part of metabisulphite can replace three of sulphite, but as this correspondent has been using Beach's developer she has really been using a metabisulphite of soda, and will find no benefit from using the potash salt.

HARD WORKER.—Thanks for article, which we will use shortly. With regard to your suggestion, this is very valuable, and we will try and see what can be done in the matter, but we must confess that we are afraid there is not time.

LANKA (1) states that our rule as to competitors sending in all the forms for the Monthly Competitions will militate against foreign subscribers sending in. The rule is not meant to apply so strictly as all that, and foreign readers may ignore it if they like, as we shall trust to their good faith. (2) No; you are not disqualified. (3) This correspondent uses a combined bath as a convenience for saving time, and finds he gets yellow-whites, whereas if he neutralises the bath the film floats off the paper. He asks: Is alum an essential ingredient in the combined bath, and is there one that will give pure whites? The yellowness of the whites when using a combined bath is to a great extent due to sulphuration, due not only to the alum in the bath, but also to the acid and free nitrate of silver in the paper. The best combined bath and method of using and making is as follows:—

Hyposulphite of soda	200 gr.
Dissolve in—	
Water	1 oz.
add	
Ammonium sulphocyanide	25 gr.
When dissolved, add	
Alum (in powder)	20 „
When dissolved, add	
Lead nitrate	10 „
Dissolved in	
Water	1 dr.

Heat the whole to 50 deg. C. for ten minutes, allow to cool and filter, and add before use ½ gr. of chloride of gold in neutral solution and an equal quantity of water. Place your prints in a 1 in 20 solution of common salt, and leave them for five or ten minutes, wash for about ten minutes, and then tone. This bath will keep well, and when the gold is exhausted it may be used instead of water to dilute a new bath. (4) What is the cause of pinholes appearing on the negative while drying, none being apparent up to the time of their being placed in the rack? Alas! we wish we did not know what this was from practical experience. This summer we have lost some good negatives from the same cause, though they are not, strictly speaking, pinholes, but rather "pitting" of the gelatine. This appearance is entirely due to the hot weather. The only remedy is to alum the plates, and dry as quickly as possible in a current of air, or by the aid of methylated spirit.

GLOSTER wishes to reduce from quarter-plate negatives so as to make lantern slides for a 2 in. condenser. The slides should, therefore, measure 1¾ in. Place negative against a window in a wooden frame, place

the camera the correct distance from it, having found this by the rule given last week in answer to C. J. Ruse, and focns on to a 1¾ in. square marked on ground-glass, and cover over the space between the lens and negative with some opaque material and then expose. Marion and Co sell plates 2 in. square 1s. per dozen, and the slowest they have should be obtained.

BUXTON states that the bottle in which he keeps his P.O.P. bath is encrusted with metallic gold, and wants to recover it. Empty the bottle, fill two or three times with water and pour out; then pour in some nitro-hydrochloric acid and turn the bottle round till all the gold is dissolved, then add a little water, pour out, rinse the bottle out, evaporate carefully on a water or sand bath till dry and then weigh.

S. C. wants (1) to take inside a house and it is not light enough. What is he to use, and when? Either hurn magnesium ribbon as suggested last week (see leader), or use a flash-lamp; and (2) this may be used any time of the day. (3) The most rapid plates are the best. (4) The exposure will depend, of course, upon what lamp is used and the size of the room, etc Upon this point we can give really no help, but for a large room about 3 ft. of ribbon would be about enough with *f*/22. (5) He has a P.O.P. bath which will not tone, although he has added gold. The best thing to do is to see whether the bath is alkaline or acid and make it alkaline, adding at the same time half the quantity of sulphocyanide. (6) The price of a good half-plate portrait lens varies from £4 to £12.

MELBOURNE.—Letter by post.

H. E ARROWSMITH.—All right; it wasn't the trouble we minded. Wish you better luck next time.

A. D. has got into trouble in intensifying and finds the films frill off in the chloride solution. This is probably due to using too much hydrochloric acid in the mercury solution, or else to the use of a developer containing caustic alkali. The best thing to do is to omit the acid and use an alkaline chloride and to treat the plates to a chrome alum bath after thoroughly washing after fixing, then dry and intensify. If the film has frilled, the only thing to do is to float it into clean water, wash well, and then slip a glass previously coated with chrome gelatine under it. and spread out under water with a camel'e-hair brush, lift caiefully and allow to dry. It may then be blackened without difficulty.

J. H. P. has been a subscriber from the first number of the AMATEUR PHOTOGRAPHER, and now for the first time "takes the liberty of troubling" us. All we can say is that he has not made proper use of the paper, or we should have heard from him more frequently. We like being troubled. it shows appreciation of our efforts, and the more queries and prints we get, the more we like it. Unfortunately, we cannot tell him much, he has almost got beyond our elementary stage. (1) We should cut an inch off the foreground, and abandon the looking-glass surface. (2) Water too white; but printed on rough paper this would be charming. (3) Whites a little too chalky. otherwise a very fine piece of work. (4) Water too white in foreground, but otherwise very good technical work. (5) Very good, wants an inch and a half off foreground. (6) Water just a little too white in the front, and distance too sharp and clear: wants clouds, but an excellent bit of technical work. (7) Good. If this correspondent will abandon his glaze, and try for softer results and send in to our competitions, somebody else will have to look out. 5 and 2 are by far the best pictorially.

G. R. CARSBERY asks for formula for developing bromide paper with Metol.

I.

Water	1 oz.
Potash metabisulphite	45 gr.
Metol	15 ,,

II.

Potash carbonate...	100 gr.
Water	1 oz.

Mix 1 part of I. with 2 parts of II., add 60 parts water, use 10 per cent solution of glacial acetic acid as restrainer. A few drops of 10 per cent. bromide is also advisable, to keep the prints clean.

STILL A NOVICE asks for Debenham's formula for backing plates. This was, we believe—

Caramel	1 oz.
Burnt sienna	1 ,,
Gum arabic powder	1 ,,

Mix and heat for ten minutes. Powell, of Denmark Hill, sells a good backing of this kind in 6d tins.

CLIFTON asks whether bromide paper can be made transparent, so that prints may be taken from it by contact, and is this cheaper in the end than making a negative on glass? All paper can be made more transparent by soaking in oil, vaseline, or a mixture of Canada balsam and turpentine, allowing to drain and drying as far as possible, but it is impossible to get rid of the grain altogether, and considering the results it is not cheaper.

J. V. JONES asks for the latest mode of building a studio to cost about £25. To do this would, we are afraid, take up too much space. but we would suggest that he send to Houghton. of 89, High Holborn; the Blackfriars Company, 1, Surrey Row: or to Overend and Co., West Green, Tottenham, when he will receive full particulars of the studios they make. There has been nothing striking in the alteration of the form of studios lately, and H. P. Robinson's book on "The Studio" is the best of its kind in English.

W. REEVES finds that in developing his plates with pyro and soda they get stained deep brown, which no acid clearing bath will remove, and asks for a remedy. Prevention is better than cure; increase the sulphite, or else use metabisulphite of potash. and fix in an acid or alum and hypo fixing bath. When the stain is there we believe there is nothing that will take it out.

RIZZIO.—By water running uphill we mean that the camera was not held straight, consequently the horizon was not straight, and the water, contrary to the usual law of nature, ran uphill. (1) Flat and over-exposed, and an awful tone. You have toned too far. (2) A little under-exposed and over printed. (3) Ditto. (4, 5, 6) Ditto. Apparently you are not carrying developing far enough. Send us up a negative or two to look at.

TRIX.—(1) Print too hard; no detail in whites, and you might have cut off some foreground, and put it on the sky. (2) Over-exposed or insufficiently developed, and the posing of the figures is too stiff; they are far too conscious. (3) Technically good, though it wants clouds. (4) Technically the best we have yet seen of your work. (5) Remove the two white blouses, and you have not a bad thing, though it is under-exposed. (6) A very difficult thing to take; we do not wonder at your failing; it wanted at least four times the exposure you gave it. (7) Over-exposed, or else under-developed; negative wants intensifying. (8) Ditto. (9) Ditto. We certainly think there is an improvement, but you have selected some of the most difficult subjects you could possibly get hold of.

H. G. H.—(1) There is a better view than this to be got of the same piece; your print wants some sky, technically good. (2) Excellent, a very happy little study; try Mezzotype or rough sepia platinum. (3) Under-exposed and under-developed. (4) A little too bard in the whites (5) Good. (6) Wants clouds, and a bit foggy. (7) Very good, just wants a bit off foreground. (8) Not so good as 7. There is a suspicion of flare spot, and the left-hand corner is weak. (9) Rather too crowded, and gives one the idea of having been taken from a height. (10) Very fair, though a bit flat. (12) A capital shot. (13) Good as portraits probably, but artistically poor. For small work you cannot do better than stick to matt chloride paper, unless you try the smoother Mezzotype.

C. B. HEADLEY asks what is flare spot. A flare is a central circular patch of light in the centre of the negative, which is due to the reflection from one or more of the surfaces of the lens, or is an image of the diaphragm aperture. The print sent is free from flare, and is better than the one sent last week, although printed too dark.

F. MILLER.—For such work as you want to do, we should say that Place'e or Tylar's shutter would do admirably, and for ordinary work they may well replace the cap, and you would find Isochromatic plates certainly of advantage in taking such coloured objects. Many thanks for the box and contents, which were safely received and duly appreciated.

MUNICIPAL.—(1) Rather too many straight lines in it, and slightly over-printed. (2) Taken the wrong way of plate, we should say; you want to show the base of the tree on right and left anyhow. (3) Over-printed. (4) Ditto; paint out the houghs on the right in the sky. (5) Over-printed, hardly paid for taking. (6) Ditto. (7) Better, but wanting in whites, which are all yellow. (9) What is this; is it really the moon or is it an under-exposed, over-printed sun? (8) Good. (10) Only wanted the trees out at the top and a figure to break the road up, and you would have had a nice little thing. You forget that in matting the surface of the paper you lower the tone of everything, and that therefore you must not print so deep as usual. Nos. 3 and 4 would make the best enlargements.

FARNBROUGH asks for the exact tone given to chloride paper by Powell's compressed uranium and platinum baths. This must depend upon the degree to which toning is carried, but in both cases the tones tend more to blackish-brown, what is called sepia by some people, than to purple.

A. W. THOMAS asks us whether it is generally known that Amidol, when kept in the dry state, gradually loses its developing power. So far as we are aware, this has not been previously mentioned, though it is now an acknowledged fact it will not keep in solution. Now that we have metol we fancy amidol is not so much used, but if the latter be dissolved and a very small quantity of alkali is added, it will act as well as ever.

RUFUS.—The City Sale and Exchange Rooms, 54, Lime Street, London, E.C.

PADDIE sends us two negatives, and wants to know how to obtain greater density. Pyro and ammonia is used and development stops before the detail is all out and chemical fog cannot be obtained by adding more ammonia even. This last sentence reveals a state of things we should like to believe, but cannot. The negatives sent are hand-camera shots and are certainly under-exposed and also show a slight veil on the edges. It is very difficult to get the proper density with under-exposure, and we should be perfectly satisfied with these negatives and intensify them. Very frequently pyro and soda will give better printing density, and we should recommend a trial of this, or else metol

KODAK No. 4 is much troubled with the curling of celluloid films, and wants to know how to obviate it. It is obviously impossible to use carriers for fixing and then subsequently for developing. Although we use carriers for developing, we have never troubled ourselves about the curling in the fixing, as we fix in a wide mouth beaker and stand the little rolls in the same on end, and find no difficulty afterwards in getting them to lie straight. It might be possible to obtain small sheets of stout celluloid and cut narrow slits in them through which the ends of the films could be put, and these could be used for developing and fixing and subsequently washed.

W. E.—(1) We are very sorry but we cannot remember the name of the cathedral; it is one we have often seen in lantern slides. If we may keep it for a few days we will try and find out for you; we fancy it is St. Ouen or Rouen. (2) The negative ought to enlarge very well to 12 by 10, and in doing it cut off a lot of the foreground. (3) The instrument you name is a good, efficient one.

NEWTOWN asks how the bottom of a red hock bottle can be cut off sufficiently straight to stand and act as a dark-room lamp. One of the simplest methods is to score the glass rather deeply with a triangular file, making a mark of about ⅛ in. in length, and then wind some rough string or worsted round, not too tightly, and soak this with methylated spirit, set fire to it, and when the spirit has burnt out plunge the bottle up to the worsted in cold water. Another method is to fill the bottle up to the desired height with oil, and heat the oil by immersing a red-hot poker or wire in it repeatedly, and then plunge into cold water. A lathe fitted with a fine corundum wheel would cut through it in a very short time. Perhaps the easiest way is to score it deeply all round with a three-cornered file, and then a sharp tap will take it off; any rough edges can then be ground off a convenient bit of pavement if kept wetted, but it is as well to see there is no local board officer about.

POLLY.—(1) Just a very slight under-exposure. Bleach your negative in mercuric chloride, wash thoroughly, and then redevelop with ferrous-oxalate developer. Cut an inch and a half off the foreground of the picture and put it on the sky and print in some clouds. This can be done by printing in a whole-plate frame and covering up the inch and a half of paper which projects beyond the negative. (2) Cut an inch and a half off the left hand of the prints from this, and mask out the spots, either by retouching or else yellow varnish. The spots are due to air bells in the developer. (3) A little too much foreground, but a good negative which ought to print well. We should use a temporary mask made of orange paper after the land has printed out, so as to allow the sky to print well. (4) A charming little bit. We should be inclined to paint over the back of the distant mountains with pale yellow varnish, so as to prevent them from printing up too plainly, and put in a sky. (5) Slightly under-exposed or under-developed. Rather a trying subject because of the straight lines in the centre. (6) The sky is so dense that the clouds cannot print through. Possibly treating the negative with bromide and bichromate of potash and nitric acid till bleached, washing well and then redeveloping with pyro till all the detail in the foreground was blackened, and fixing before the sky was quite developed through, would improve matters. We think that you would have done better to have gone lower down and arranged your camera so that the bush now on the left came on the right and broke the end of the bridge up. These straight lines are rather distressing. (7) As to clouds, see last note. Water too white, and a shifting of the camera so as to have cut out the telegraph pole would have been possible and an improvement. (8) A very taking bit. After the landscape has printed out use a mask of orange paper and let the clouds print through. Keep the mask on the shift so as to prevent a hard outline. (9) Camera not straight. Do you not see that the water is at an acute angle, and the water is too white? (10) Slightly under-exposed; the distance is too clear and distinct. (11) Air bubbles and development marks. Reduction may be effected by rubbing or else using Farmer's hypo and ferridcyanide reducer. Your work shows great care, but you have a tendency to under-expose slightly, and your negatives are very clean and pretty looking, but if you would get yellow-stained negatives they would yield better prints. We shall be pleased to see some more work if you like to send it. With regard to platinotype printing the best thing to do is allow the whole of the negative to print slightly and then cover up one-fourth with deep orange paper and allow the printing of rest to go on; then cover up another fourth, and so on till the whole has printed. Now remove the print from the frame and cut a narrow, about half-inch, strip off it, develop the remainder of the print, and compare the developed print with the slip cut off. From this you will be able to judge to what extent the details should be visible in the printed paper before development to give you the most pleasing result.

G. A SAVAGE.—We have been unable to send the certificate, as we have had to get some Woodburytype prints made for them, and this has taken longer than we expected.

F. W. WALKER.—Your stops are (1) *f*/11·31, (2) *f*/18, (3) *f*/28, (4) *f*/56.

The AMATEUR PHOTOGRAPHER

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

Our Views.—Our Competitions—Mr. Woodbury's Plagiarism—English and American Journals—American Piracy—Ladies and the L. and P.—The Convention Accounts—Bristol Exhibition—Polytechnic Classes—Exposition at San Francisco—The Central Club—The *Pall Mall* on Photography.
Leader.—Photography with Magnesium.
Flotsam and Jetsam, by Anchorite.
The Month.
Letters.—Glazing Chloride Prints (Gill)—Newcastle Exhibition (Brown)—A Development Question (Sharer)—Photographs of Old Buildings (L. F. S.)—Finchley Club (Crane)—Judges at Leytonstone (Bailey)—A Book Club (Alpha) And Echo Answers 'Why?' (Ycrep).
Our Lantern Screen.
The A B C of the Lantern.
Monthly Competition.
Articles.—Eder's Handbook to Emulsion Photography—At the Dudley Gallery—Waste Not, Want Not.
Splashes of Ink, by Penfeather.
Societies' Notes.
Societies' Fixtures.

EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

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Postal Union	„ „	6s. 6d.	„ „		13s. 0d.
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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

We have had no light task, though a very pleasant one, carefully reading through the letters from a very large number of correspondents about our Monthly Competitions. Condensing them very much, we have arrived at the following digest of suggested improvements:—(1) That all prints or slides should be returned if desired. (2) That the size of the winning prints should be given. (3) That a *nom de plume* be adopted by all competitors. (4) That the competitions should be quarterly only, and two prints sent in to each. (5) That the supplement should be issued separately with high-class illustrations on toned paper and charged extra. (6) That the criticisms should be much extended. (7) That marks should be awarded and prizes given at the end of the year. (8) The following new subjects are suggested: (*a*) flashlight work; (*b*) illustrations to poems, choice to be left to competitor; (*c*) street life (open to all); (*d*) survey work; (*e*) magpie architecture or old black and white buildings. (9) Two classes each month—(*a*) for landscapes and seascapes, and (*b*) for portraiture and figure studies. (10) Print competitions to be continued through the winter.

With regard to suggestion No. 1, this destroys one valuable feature of our competitions, namely, our loaning of prints and slides to societies. No. 2 is at once acceded to. No. 3: this we already allow. No. 4 is against the general consensus of opinion as regards lessening the number. With regard to the question of two prints, we think this good, and shall probably adopt it. As pointed out, it prevents fluking. No. 5 has practically been tried in the shape of *The Reporter*, and failed. No. 6 we will try and accede to. No. 7 is decidedly good and well worth consideration. Also some of No. 8. No. 9 we cannot accede to; one competition is enough. No. 10 we will try and accede to. At the end of November is our Advertisement Competition. For December we will announce later a subject.

To all those correspondents who have written us such kindly letters we return our hearty thanks, and we can only repay them by trying to make our competitions more useful in the future.

In our issue for Aug. 4th we accused Mr. Walter E. Woodbury of plagiarism with regard to an article on "The Action of a Lens Simply Explained," originally written by Mr. Taylor, of Messrs. Taylor, Taylor, and Hobson, and we should have taken no further notice of the matter but Mr. Woodbury has written to us privately and says that the article "was written by me; as it is a very clear statement of facts that have been written over and over again, there is little wonder at its being similar to another on the same subject." In the *Photographic Times*

for September 22nd Mr. Woodbury stigmatises our assertion as "ridiculous." It may be, but we shall see.

IN a recent number of the *Photo-American*, Mr. Woodbury, writing to the Editor after complaining of his not having waited for the reply to the charge, states:—"Not only is the charge of plagiarism absolutely without foundation, but I am well aware that the attack upon me has been made through personal motives and the knowledge that I am *at present* too far away to adopt those methods which I consider best to obtain satisfaction. I have written many hundreds of articles relating to photography and other subjects, but I have not yet found the necessity of using other persons' articles."

IF the statement that the attack has been made through personal motives applies to us, as we were the first, we believe, to call attention to the point in question, we flatly deny it. As we have only met Mr. W. E. W. twice, he is to us a stranger. As to his never having found it necessary to use other people's articles, we could, were it worth the trouble, print parallel columns from a certain encyclopedia published in 1890, and another work published in 1889, but we are content to print by permission the following letter which appeared in a contemporary:—

"I have to thank you for calling my attention to a paper contained in the Convention number of the *Photographic Times* of New York, and pretending to be written by Mr. Walter E. Woodbury.

"As a specimen of cool and impudent plagiarism, this work of Mr. Woodbury's is a model.

"The paper, which is entitled 'The Action of a Lens Simply Explained,' is a garbled transcript of a paper entitled 'The Principles of a Lens Action,' which I wrote several years ago, and which has been published in the AMATEUR PHOTOGRAPHER, and in all recent editions of my firm's catalogue of photographic lenses (Taylor, Taylor, and Hobson).

"It is true that Mr. Woodbury has taken pains to say 'the boy is not so tall as the man,' when I have said, 'the man is taller than the boy,' and that my diagram is shown with black lines on a white ground instead of with white lines on a black ground. This is very clever of Mr. Woodbury, and displays the character of his sparkling originality.

"But from first to last, with slight periods of digression, and where there is embodied other matter whose origin is equally indisputable, the paper reads side by side with my own in the following way.

ORIGINAL.	PLAGIARISM.
"As sound is transmitted by wavelike motion of the air, so is light transmitted by the wavelike motion of certain ether filling universal space.	As sound is transmitted by a wavelike motion of the air, so is light transmitted by the wavelike motion of this luminiferous ether.
"A surface capable of being seen must be, to some extent, rough. The roughness acts in this ways: Waves of light meeting the surface, and reflected from it, are broken up by the rough particles. Each projecting particle becomes a centre from which reflected waves of light spread out in all directions.	Waves of light meeting the surface of an object, provided it be to some extent rough, are broken up. Each particle becomes a centre from which waves of light are reflected and spread out in all directions.
"The angle of view of a lens is determined by the relation of its focal length to the measurement of the image which it can usefully define.	The angle of view of a lens is determined by the relation of its focal length to the measurement of the image which it can best define.

"I fancy the name of Mr. Walter E. Woodbury was not unknown to me before, but it is a surprise to find him capable of such a thing as this. It will be well for American photographic journalism to purify itself from such imposture and impostors.

"We are accustomed to look upon America as the peculiar home of men like Mr. Woodbury, but I cannot think the responsible owners and editors of American photographic journals contemplate with satisfaction such conduct.—I am, yours, etc.",

"Slate Street Works, Leicester. WILLIAM TAYLOR."

IN commenting on this matter, the *Photo-American* says: "The English journals are very bitter against some American publications—we trust we are not among the number—on account of the uncredited copying of their articles." We take a strong but friendly exception to being classed among those who feel so bitter against our American confreres: we are rather amused than otherwise, when we see anything of ours cribbed and not credited. We take it as a very high compliment; and really felt flattered when we noted that three American journals had coolly and without acknowledgement absorbed the best part of our abstracts, "The Month," especially as our friend the Editor of the *Photo-American* took the lion's share. We hope, however, he will continue to do so should he think fit.

STILL, there is one thing which most Englishmen feel very bitter about, and that is the wholesale piracy of books by our Transatlantic cousins. It is a crying shame that the law of international copyright is not in a better state, so that authors cannot protect themselves more readily than at present, although if you know the right way to go to work you can copyright a book in America much more easily than used to be the case. All that is necessary now is to have two duplicate title-pages either set up in type and printed from, or else type-written in the States, and send these to the Librarian of Congress, Washington, with three dollars.

THE American photographic publishers are not more scrupulous than the rest, and there is not a single English photographic book of any value which has not been pirated and sold in America. There are some exceptions; at least, we know personally of one house who have paid something to an English author.

IN our issue of 20th ult. we commented on the quandary into which a well-known society, the London and Provincial, had fallen on the question of ladies; and on Thursday last, a special general meeting was held after the usual meeting, and after a somewhat warm discussion the misogynists carried the day by 3 to 1, so that ladies may become honorary members but not ordinary members.

THE arguments against the admission of ladies to ordinary membership were chiefly from the point of view that the freedom and unrestricted interchange of views now in vogue would be seriously handicapped, and the proposer of the amendment against the fair sex held with Milton that

> "Nothing lovelier can be found
> In woman, than to study household good."

IT was suggested that a ladies' photographic club should be formed, but this has already been tried, and there was not sufficient response to warrant it being anything like a success. Evidently there is no possibility of a second Princess Ida.

WE are glad to be able to announce that the accounts of the Plymouth meeting of the Photographic Convention have now been made up, and it is satisfactory to learn that there is a small balance on the right side. The sum of £10 has been sent to Birmingham as a contribution towards the unfortunate deficit on the meeting held there in 1888.

WE would again call special attention to the Bristol Photographic Exhibition. We hear that a very fine collection of foreign exhibits is expected, and nearly all the leading English exhibitors will send in pictures. We publish elsewhere the list of classes and prizes, and the Hon. Secretary, Mr. F. Bligh Bond, 36, Corn Street, Bristol, will at once send on entry forms on application. December 1st is the latest date.

THE twelfth session of the photographic classes at the Poly-

technic will be inaugurated on Tuesday, the 7th inst., at 8 p.m., by an introductory lecture by Mr. Howard Farmer, on "Can gradations be varied: can incorrect exposure be corrected by development?" Mr. Thomas Fall will take the chair. Tickets may be obtained on application to Mr. Howard Farmer, and the lecture promises to be very interesting, as the opinions of many of the leading workers have been collected, and the question is one to which considerable attention has been and is being paid.

THE instruction offered at the Polytechnic School is comprehensive and complete, as a glance at the advertisement on p. xv. will show. The fees are very low too. The subjects comprise every branch of photography, both practical and theoretical.

UNDETERRED by the financial failure of the World's Fair at Chicago, a midwinter International Exhibition is to be held at San Francisco, California, at which all the virtues and none of the failings of Chicago are to be present. The exposition will be opened from January 1st to June 30th, 1894, this being the finest time of the year in California.

THE Central Photographic Club is decidedly becoming a general rendezvous for social meetings. On Friday last there was a big discussion on the respective merits of the developing powers of tea versus coffee. Following this some chess and draughts, interspersed with various on dits anent photographic men and matters. Then Mr. Birt Acres showed some of his own and Mr. J. B. B. Wellington's slides, and afterwards supported the mantelpiece in thorough John Bull style, and stood a gallant fire of questions on the carbon process.

THE dark-room, it is hoped, will be ready this week, and the foundations of a library are already laid. Mr. Fall in the middle of this month is to start a one-man show, followed by Messrs. Richard Keene (of Derby), F. W. Edwards, and others. Messrs. Cembrano and Horsley-Hinton are to give some talks, whilst on the 3rd inst. an exhibition of hand-cameras, all the leading makers being represented. On the 10th Mr. S. H. Fry is to lecture on the Paget printing-out processes. Visitors will be welcome, or one of the Hon. Secretaries is always in attendance every evening, and the rooms are open all day with an attendant in charge. Sociality, combined with photography, is to be the watchword, and it is hoped that smoking concerts, etc., will enliven proceedings at stated intervals, although there is always smoking going on, and the concert of good opinions is also frequently heard. The address is Coleman's Hotel, Henrietta Street and Maiden Lane, Covent Garden.

THE *Pall Mall Gazette* of 30th ult. had an amusing note on photography, which we reprint.

"Each succeeding generation has one or more manias, to which it devotes itself heart and soul, and runs stark mad upon. Our grandmothers had a passion for the creation of waxen fruits and unhealthy-looking flowers; our mothers in the days of their youth made mirrors hideous with the "transfer" craze, while our younger aunts covered every square inch of chair and couch with uncomfortable, unlovely crochet things; and now we have got the photographomania, and have got it too as we get most things at this end of the century, rapidly, furiously; every girl who can possibly afford it nowadays has a camera, and becomes the terror of her relatives and friends! An amateur photographer is a terrible person to know; there is nothing like him for taking the conceit out of one and reducing one to a dead-level of plainness! A slight depression of the cheeks becomes in his hands a formidable illustration of the expression 'lantern-jaws;' and to a lady who boasts a complexion (natural or acquired), the view of her face delicately pitted all over as with the small-pox is distinctly depressing. The amateur photographer is at his most harmless when reproducing landscape; only then he manages to score off his master the sun, in 'developing' his plate, and the cloudless sky becomes a blur and the flowing stream a smudge! Besides he always wants a long-suffering one to allow himself to be put in to 'give life to the picture,' and if the luckless creature escapes with only a couple of heads and three feet he may consider that the gods have been good to him. Altogether photography, amateur and otherwise, seems to have run rather mad within the last few years. Love, in the old days, had the credit of being the great leveller; but the little blind boy has most decidedly had to yield the palm to the photograph. Abolish the class distinctions! Fuse both ends of the social scale into one perfect whole! Why, isn't it done every day in the window of a fashionable photographer? There is not the smallest doubt that the assistant who arranges the portraits must be possessed of a keen sense of humour; his grouping must be the result of a strong notion of the worth of contrast, else why does he so systematically 'mix' his characters?

"Why is it that a bishop is almost always sandwiched between a burlesque actress in full battle-array and a ballet dancer in all the glory of balloon skirts and the inevitable smile? Why does a lady of high degree and of the bluest blood invariably have for her neighbour a low-comedian with hat on one side and impossible gloves and shoes? Why does the scientific man rub corners with the latest heroine of a *cause celebre*? Why are theatrical managers and Irish members jostled together pell-mell, and so on and so on, incongruities multiplied *ad infinitum*.

"One of the queerest crazes of photography is the latest new pose, which is in itself an epitome of the *sans façon* of the age. The newest idea is to get the sitter to stand or sit with her back to the camera, and her head turned slightly over one shoulder; so that the picture comes out with a full and true view of the fair one's back, with her face only visible in faint profile. Original it undoubtedly is, and as such will possibly become the rage; whether it is either artistic or pleasing is quite another matter."

THIS is good. Now we know what they think of us. The *Pall Mall* is kind enough to fulfil for us the oft-quoted lines of Burns—

"O wad some power the giftie gie us
To see oursels as others see us!"

Poor Photographomaniacs. We want some Gilbert to celebrate us in song, and we should all drop our hobby in sheer despite.

PHOTOGRAPHY WITH MAGNESIUM.

WE now come to the consideration of the second method of burning the magnesium, namely, in the form of powder. One of the earliest methods of doing this was to pull out a small pledget of pyroxylin, sprinkle with magnesium powder and set

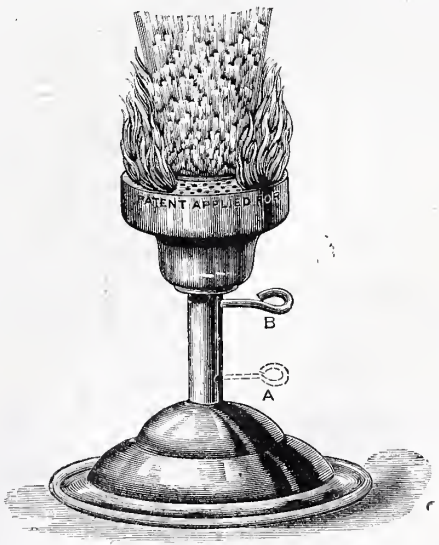


FIG. 8.—ADAMS' "PERIOD" LAMP.

fire to it. Our readers must forgive us if this article is somewhat like the page of a dealer's catalogue, but this is to some extent unavoidable, and the leading forms of commercial lamps are introduced, so that we may not have innumerable inquiries as to makers of the same and the best forms.

Roughly speaking, there are two distinct forms of these lamps—the one in which a mere flash is given, the other arranged for a more or less continuous light. The simplest form of this lamp is shown in fig. 7, as sold by Perken, Son and Rayment. In this the magnesium powder is dropped into the small funnel of the glass tube; the brass trough in front filled with spirit and lighted, the funnel closed by the finger or thumb, and the ball pressed and the magnesium projected through the flames. Other firms—Vevers for instance—make somewhat similar lamps. Another simple lamp, which is sold by Marion, and Adams and others, is what is called the "Period" lamp, shown in figs 8 and 9. The main idea of this lamp is evidently that the operator may take himself, or work two or three in succession at different distances. To work it about 5 gr. of magnesium powder are put into the small hollow central cup, the trigger B is pulled down and fastened at A in a small notch, and the spirit lit; the operator may now take his place in a chair previously focussed, and by a sharp pull on a wire or string attached to the trigger it is released, springs up, and throws the powder through the flame.

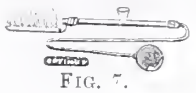


FIG. 7.
THE HASTINGS LAMP.

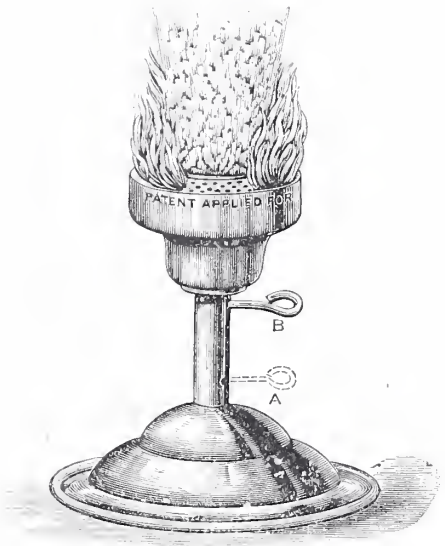


FIG. 9.—ADAMS' "PERIOD" LAMP.

Another form of lamp is shown in fig. 10, in which the powder is blown through the flame, and is the Sheffield Photo Company's "Eclipse" lamp. Fig. 11 is another form of lamp, in which the powder is placed in the central hollow, *a*, and the spirit, which is absorbed by asbestos lying in *b*, is lighted, and pressure on *d* blows the powder through the flame. Fig. 12 represents a simple form in which the powder is blown through the flame either by the mouth or india-rubber ball.

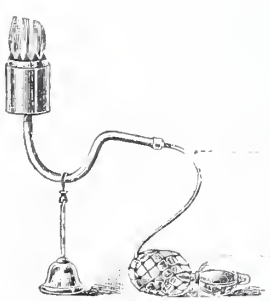


FIG. 10.

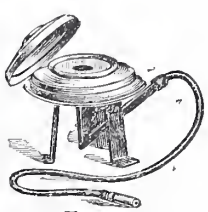


FIG. 12.
ADAMS' CHALLENGE LAMP.

We now come to a slight difference in principles of construction. Fig. 13 is Sharp and Hitchmough's Aptus lamp, in which the magnesium is blown down into the flame. In fig. 14 it will be seen that the magnesium is placed in the metal tube through the slit on top, which is then closed and then blown through the three spirit flames.

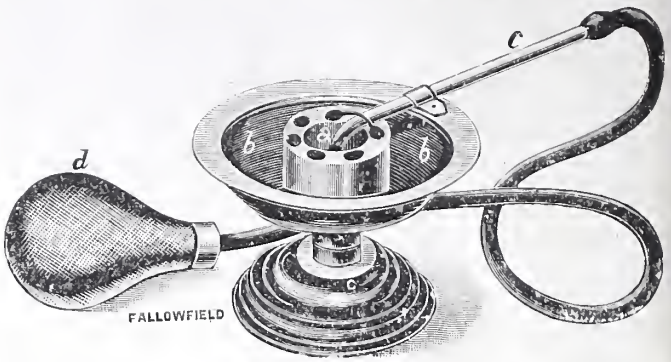


FIG. 11.—FALLOWFIELD'S METEOR LAMP.

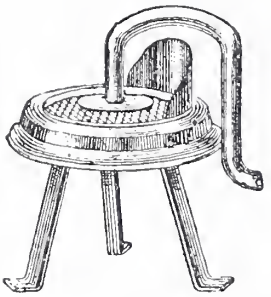


FIG. 13.
APTUS LAMP.

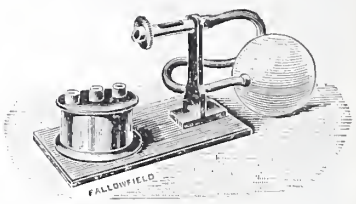


FIG. 14.
FALLOWFIELD'S FARLEIGH'S LAMP.

Flotsam and Jetsam.

Black and White on Saturday came out with an admirable portrait of Henry Irving, as he appeared in "Becket" last spring. It was a magnificent production, not merely a likeness, but a veritable portrait, full of expression, and full of character. Such work as this—all too rare, alas!—is the best answer that can be made to those who cry down photography as mere mechanism, and deny possibilities.

THE excellence of this portrait is not surprising, for it was a reproduction of the last of the twenty-five portraits in Mrs. and Mr. Cameron's book, "Lord Tennyson and his Friends," which has recently been published, and which forms a veritable portrait gallery of intense interest. No photographer who has the chance of seeing and studying this series of portraits, so realistic, so full of art, should miss it.

THE introduction of the camera into politics has already been noted in this column. It seems, it is to be made use of in connection with the Labour Movement. A correspondent of the *Standard* suggested the other day that in case of future rioting in the colliery districts a Kodak should be used.

"AN instantaneous photograph would show beyond question the attitude of the peaceable colliers. And it would afford means for showing a flight of missiles, etc., and, what would be more important, the identification of the ringleaders."

So in the future the Kodak must be made part of the equipment of the up-to-date P.C., and doubtless the colliers will heed the suggestion too, and if there is any more rioting to do, or any occasion to demonstrate (the distinction between the two terms is not quite clearly drawn yet), perhaps it will be found convenient to do it at night.

Query: Would the *Standard's* correspondent in that case advise that the materials for a magnesium flash-light should be served out to the officers?

The Belgian Minister of Railways, Posts, and Telegraphs has, so we are informed by a contemporary, inaugurated a system of fortnightly tickets, which carry the holder on any line in the country. Only each ticket must bear the holder's photograph and a deposit of five francs, returnable when the ticket is given up, is required.

There is a good deal to recommend this arrangement from the company's point of view, and equally from the photographer's standpoint, no doubt. How the passenger will care to have to submit his ticket and his face for inspection to every guard or ticket collector whom he runs across in his travels is quite another thing.

The application of the system to season tickets is different and looks far more reasonable and practicable. But suppose the photograph were bad, or that the holder of the ticket shaved, or grew a beard? The supposition seems to spell actions for false imprisonment, so perhaps the studios won't be full of commercial and City men wanting their photos taken just yet.

Looking down the lists of literary announcements that appear in the various journals of the day, one cannot but be struck by the large numbers of works which are indebted to photography for the illustrations that appear in them. Indeed, it is scarcely an exaggeration to say that 75 per cent. of the illustrated books of the day are so indebted. To photographers of artistic leanings, one such book of surpassing interest should be that on "Rembrandt," which Mr. Heinemann is publishing this week.

It contains a number of full-page photogravures of the master's work taken from both public and private collections, besides a large number of illustrations in the text.

Anchorite.

The Month.

Gold Soluble in Water.

In the *Naturforscherversammlung* at Nuremberg, Dr. Schottländer described a curious colloidal form of gold, which was completely soluble in water with basic acetate of cerium. The solutions are a strong violet-red colour, but when diluted, carmine-red. The intensity of the colour is so great that a solution containing 1-500,000th of gold is still distinctly rose-red. Such solutions are obtained by precipitation of a dilute solution of a cerous salt mixed with gold by means of potash or soda lye and solution of the black precipitate formed in hot dilute acetic acid, or by boiling mixed solutions of cerous acetate, gold chloride, sodium hydrate in the proper proportions. From the red solution sodium acetate precipitates a violet-red precipitate which contains all the gold and some of the basic cerous acetate. On drying the precipitate, an amorphous, bronze-coloured, glittering mass is obtained, which is soluble in water. This is somewhat akin to Carey Lea's soluble silver.—*Photo. Mittheil.*, Oct. 15, p. 212.

Photographing Clouds.

Angot gives the result of his experiments in photographing clouds, and suggests as the best method the use of small cells with parallel sides with an internal thickness of 0·006 m. (=¼in.). The coloured liquid he prefers is a solution of bichromate of potash containing a little hydrochloric acid, and three strengths should be prepared, 10 per cent., 5 per cent., and 2·5 per cent. The darkest screen should be reserved for the lightest clouds, especially when the sky is not a pure blue; the lightest screen is most suitable for cumulus clouds. The exposure varies, of course, with the lens, etc. With a lens stopped down to *f*/30 and the deepest screen, it is possible to obtain the very lightest cirrus with an exposure of half sec. With a lens stopped down to *f*/15 and the medium screen, 1-30th to 1-40th sec. is sufficient. Any developer may be used, but care should be taken to prevent blocking up of the high lights.—*Photo. Gazette*, Oct. 25th, p. 223.

Notes on the Tele-photo Lens.

Dallmeyer gives the following useful rules for estimating certain data of tele-photo lenses:—

(1) To find the equivalent focus of combination: Multiply the foci of the two elements together, and divide the result by the sum of the focus of the negative lens and the separation, after having subtracted the focus of the positive lens from this sum.

Example:

Let the focus of positive lens = 6 in.
„ „ „ negative lens = 3 „
And the separation .. = 3¾ „

Then

$$\frac{6 \times 3}{(3\frac{3}{4} + 3) - 6} = \frac{18}{\frac{3}{4}} = 24.$$

(2) To find the back focus: Multiply the focus of the negative lens by the difference between the focus of the positive lens and the separation, and divide the result by the sum of the focus of the negative lens and the separation, after having subtracted the focus of the positive lens from this sum.

Example:

$$\frac{3\ (6 - 3\frac{3}{4})}{(3\frac{3}{4} + 3) - 6} = \frac{6\frac{3}{4}}{\frac{3}{4}} = 9.$$

(3) To find the magnification for any chosen extension of camera: Divide the distance from negative lens to screen by the focus of the negative lens and add one.

Example:

$$1 + \frac{9}{3} = 4.$$

(4) To find the equivalent focus of the combination for any chosen extension of camera: Multiply the focus of the positive lens by the magnification.

Example: $4 \times 6 = 24$.

(5) To find the intensity (*f*/x value) for a given extension of camera when the magnification is known: Divide the intensity of positive lens by the magnification.

Let us assume that our 6 in. positive lens is working at *f*/8, then $f/8 \times = f/32$.

The only other data required are—

(6) To determine the diameter of the plate covered.

(7) The extreme angle included.

These cannot be reduced to simple rules, but, although rather appalling at first sight, the following formulæ are really easy, and allow us to determine these data.

(6) To determine the diameter of the plate covered:

Let D = the diameter of the plate.
A = the full diameter of positive lens = $\frac{7}{8}$″.
a^1 = the full aperture of negative lens = $\frac{5}{4}$″.
v = the back focus as above = 9″.
f = focus of positive lens.
f^1 = focus of negative lens.

Then

$$D = (v + f^1)\ \frac{avf^1 + a^1 f(v \times f}{f^1[v(f - f^1) + ff^1]}$$

Example:

$$D = (9 + 2)\ \frac{\frac{7}{8} \times 9 \times 3 + \frac{5}{4} \times 6 + 12}{3[9 \times 3 + 6 \times 3]}$$

$$= 12 \times \frac{113\frac{5}{8}}{3 \times 45} = \frac{909}{90} = 10{\cdot}1'' = \text{diameter of circle.}$$

(7) The extreme angle included by the combination is given by the following formula :—

Let a = the angle, and F = the equivalent focus.

Then

$$a = 2 \tan.^{-1} \frac{D}{2F} = 2 \tan.^{-1} \frac{10\,1}{48} = 2 \tan.^{-1} \cdot 210416.$$

And from a table of natural tangents we find tan. 11° 53′ = ·21043, hence the extreme angle = 24° nearly.—*Congress of Photographers., U.S.A.*

Rapid Collodio-Bromide.

David gives the following process for obtaining rapid dry collodion plates showing 22° to 23° W. A plate 9 × 7 in. is levelled and coated with an ounce of collodion made by dissolving silver nitrate 18 parts, 7 or 8 parts of pyroxyline in 1,000 of alcohol ether. When set, the plate is then bathed in—

Potassium bromide	80 to 120 parts
Potassium iodide	0·01 part
Gelatine	2·0 parts
Distilled water	1,000 „

When the film is absolutely opaque, the plate is placed in—

Potassium bromide	18 to 25 parts
Gelatine	1 part
Distilled water	1,000 parts

And the temperature maintained at 70° to 75° C., when the sensitiveness is attained in two hours; in one hour, however, if the temperature be 90 to 95° C.—*Bull. Belge. de Photo*, Sept., p. 567.

The Focal Plane Shutter.

Poton d'Amecourt states that the advantages of the focal plane shutter are: (1) The exposure can be very short, and it depends solely upon the rapidity of movement of shutter and the width of the slit. If V = the speed of the shutter and L the breadth of slit, the time of exposure P will be :—

$$P = \frac{L}{5}$$

For example, V = 5 m. per sec., and L = 0·001 m., the P = 1-5000th sec.

(2) The shutter is at the base of the cone of rays formed by the lens, and the opening and closing is therefore reduced to a minimum, and the whole of the lens is acting during its movement. The efficiency of the shutter is therefore approximately unity, whilst a shutter acting on the lens = 0·5. The only disadvantage is that as the whole of the plate is not exposed at once the image may be distorted. To estimate this distortion d'Amecourt and Bellieni undertook some experiments with the following results: The maximum speed which should be given to the blind should not exeeed 4·6 to 5·0 m. per sec., according to the size of the slit. Numerous measurements showed that the speed during the movement is almost always constant, and only towards the end was there an increase, but as this corresponds to the sky it is an advantage rather than otherwise. Too strong a spring is not advisable, since the material is stretched and the slit is not uniform in width. By 30 to 35 revolutions of the spring an increase of speed is to be noticed, but after this the increase of speed is not proportional. As to the distortion of the image, this will depend in the first place on the amount of reduetion. Suppose a ship going at 11·19 m. per sec. across the field is taken 1-100th of its natural size on a plate 9 by 12 cm., a case that will hardly occur in practice, this ship will, whilst the blind moves 9 cm., move in 1-55th sec., 0·2 m. As we have reduced the image to 1-100th, the point of the mast will show a movement of 0·20 m. ÷ 100, or 0·2 cm. The angle x that the image of the mast makes to the vertical will be then :—

$$\tan. x = \frac{0{\cdot}2}{h};$$

and as the height h of the plate = 9 cm.

$$\tan. x = \frac{0{\cdot}2}{9} = 0{\cdot}0222,$$

$$\text{or } x = 1^\circ\ 16'\ 23'',$$

an amount not noticeable with the naked eye. If it is required to take a horse of 1·60 m. high in 1-40th of its natural size, its image will be 4 cm. high. The shutter slit will travel this 4 cm. in 1-125th sec. If the horse gallops 8·30 m. per second, and its feet double that speed, they will then in 1-125th sec. move 0·13 m., or in the image 0·3 cm. If we assume the point of the shoulder as the starting point of the estimation of the displacement, this distance from the hoof will be 2·5 cm. in the image, a stretch which the roller-blind slit will pass through in 1-200th sec. During this time the feet in the image will move 0·2 cm., or about one-half to two-thirds of the breadth of the fetlock, a dimension which with regard to the size of the image can hardly be observed.—*Photo. Corresp.*, Oct., p. 475.

Combined Iron and Eikonogen Developer.

Hermitte states that this combination gives excellent results. His method of procedure is as follows :—Saturated solutions of oxalate of potash and sulphate of iron are prepared ; 8 parts of eikonogen are dissolved in 100 of distilled water. In a bottle capable of holding 150 parts, 100 of solution of sulphate of iron are placed, and 2 parts tartaric acid added, and the whole allowed to stand for one day in the light ; then 10 parts of the above 8 per cent. solution of eikonogen are added ; the solution turns cloudy, is allowed to settle, filtered, and returned to the original bottle, which should contain some crystals of iron. The formula is—

Solution of oxalate	50 parts.
„ iron and eikonogen	8-10 „

The development is exactly the same as for ordinary ferrous oxalate. Hermitte adds, "Le temps de pose par ce procédé doit être réduit environ d'un tiers comparé à celui exigé par l'emploi du fer seul," or, as we should say, "the exposure is reduced to one-third, by this process, of that required for the iron alone."

[It is unfortunate that Hermitte has forgotten that when an acid is added to a solution of eikonogen, which is the soda salt of amido-beta-naphthol-beta-sulphonic acid, the sulphonic acid is precipitated. The formula for eikonogen is—

$$C_{10}H_5NH_2ONaHSO_3, 2H_2O,$$

the formula for tartaric acid $H_2C_4H_4O_6$. From this we get $Na_2C_4H_4O_6$, the formula for sodium tartrate, from which it is easy to reckon that the whole of the soda of eikonogen would combine with some of the tartaric acid to form tartrate of soda, and the sulphonic acid would be precipitated, therefore Hermitte has been using the ordinary ferrous oxalate with a very small trace of sodium tartrate and excess of tartaric acid, and as all acids act as restrainers in the oxalate developer and tend to make the shadows more glassy, we fail to see how his contention of reduction of exposure can be supported.—EDITOR.]—*Photo. Gazette*, Sept. 25th, p. 202.

Removal of Developer Staining.

R. E. Liesegang gives the following useful hints on the removal of the stains caused by the oxidation of the various developing agents. The stain caused by paramidophenol can be removed by soaking in solution of oxalic acid and exposing without washing to sunlight for two hours; a concentrated solution of sodium sulphate acts better still without exposure to light. The yellow stain of pyro can be removed by solution of citrate of tin. The stain of Amidol can be best remedied, but not entirely though, by citrate and acetate of tin. In using these last two agents one must be careful, as they will dissolve gelatine.—*Photo. Archiv.*, Oct. 1st, p. 292.

Thiosinamin.

R. E. Liesegang gives the following further notes on this subject. The prints, which were fixed in August, superficially washed or toned with thiosinamin and gold and exposed to light, show no change after exposure to light and air. In an alcoholic solution of thiosinamin chloride of silver seems more easily soluble than in an aqueous solution ; therefore, alcohol

may be added to the bath so as to act as a tanning agent on the gelatine. Concentrated solution of pure chloride of silver becomes faint yellow when exposed for several days to light, but the addition of acid prevents this. A concentrated solution of silver chloride spread on paper and exposed to sunlight for several days remains absolutely white. It is advisable, however, to wash the prints, especially if toned, as the gold salts are sensitive to light. A gelatino-chloride print toned and fixed with gold and thiosinamin shows a strong relief, the exposed places being depressed.—*Photo. Archiv.*, Sept. 15th, p. 273.

Liesegang also states that sulphocarbamide is more soluble in water than thiosinamin, its derivative.—*Photo. Archiv.*, Oct. 1st, p. 289.

Dr. Bogisch states that sulphocarbamide is also a good solvent of haloid silver salts and is cheaper than thiosinamin, but the removal of the whole of the silver from the paper is somewhat difficult, as a small quantity of silver in the form of $2CH_4N_2S + AgCl$, remains behind, and this is decomposed by ammonia or sodium hydrate into Ag_2S, silver sulphide, which may be prejudicial. The easy reducibility of the silver compound necessitates the use of acidulated water, as otherwise lime in the water will turn the prints brown, therefore Bogisch always adds citric acid to the sulphocarbamide. If sulphuric acid is used the silver compound is insoluble, therefore sulphates in the washing water are prejudicial. This property of precipitation by sulphuric acid Bogisch has used for producing opal films for transparencies. By placing a transparency after washing out the developer in a solution of sulphocarbamide 10 parts, citric acid 10 parts, water 1,000 parts, and then, without washing, placing in alum 100, citric acid 15, water 1,000, or by placing direct into a solution of sulphocarbamide 5, alum 100, citric acid 15, water 1,000. Unfortunately, the white film is not stable, and stains and spots appear. Bogisch states that the citric acid solution of sulphocarbamide totally removes the stain of pyro from paper or negatives, and the stain never returns. This presents great advantages over any other clearing bath.—*Photo. Archiv.*, Oct. 16th, p. 310.

Valenta gives the following tables of solvent powers of thiosinamin and hypo for silver salts.

I.

Thiosinamin in solution of strength.	100 parts dissolve		
	AgCl.	AgBr.	AgI.
1 : 100	0·40	0 08	0 008
5 : 100		0 35	0·05
10 : 100	3·90	0 72	0·09

II.

Hyposulphite in solution, of strength.	100 parts dissolve		
	AgCl.	AgBr.	AgCl
1 : 100	0·40	0·35	0 03
5 : 100	2·00	1·90	0·15
10 : 100	4·10	3·50	0 30
15 : 100	5·50	4·20	0 40
20 : 100	6·10	5·80	0·60

—*Photo. Corresp.*, Oct., p. 473.

A New Treatment of Gelatino-Chloride Paper.

R. E. Liesegang states that beautiful tones may be obtained by the following process, for which, washing preliminary to toning is unnecessary. The prints are placed in—

Aluminium sulphocyanide (19° Be)	25 parts
Water	75 „

and allowed to remain three or five minutes till they have become yellow. Then place in water, which should be changed twice, then into a solution—

Gold chloride...	1 part
Water	1000 „

in which they tone rapidly to a deep blue-black, they should be then well washed and fixed as usual. The explanation of the action of this treatment is as follows: the sulpho-salt converts the unexposed silver chloride into sulphocyanide, and this dissolves in excess of aluminium sulphocyanide, but the film is not completely fixed, as the silver salt is precipitated by washing. For toning no alkali or sulphocyanide is required, as the aluminium salt acts favourably.—*Photo. Archiv.*, Oct. 16th, p. 305.

Nature and Cause of certain Yellow Stains on Gelatino-chloride Paper.

A valuable paper on this subject by Bothamley, giving the result of experiments to determine the cause of stains which appear during the washing between toning and fixing. The following are his conclusions:—

(1) The yellow (or brownish-yellow) stains are not due to anything in the paper itself, and with proper manipulation no such stains are produced.

(2) They are not due to any impurity ordinarily present in ammonium sulphocyanide.

(3) They are not directly due to imperfect washing before toning, but, at the same time, this washing should always be carefully done.

(4) They are not due to acidity of the sulphocyanide bath, even when it is sufficiently acid to turn blue litmus paper decidedly red.

(5) The stains that appear between toning and fixing appear only when the paper comes into contact with small quantities of hypo (sodium thiosulphate) during the washing that follows toning. The quantity of hypo required to produce bad stains is very small.—*Photo. Scraps*, Oct.

Notes on Photoxylographic Processes.

Lainer suggests the following emulsion for printing on wood blocks.

Gelatine solution 1 : 20	5 parts
Baryta white ($BaSO_4$)	7-8 „
Sol. ammonium chloride (1 : 10) ..	1·5 „
Sol. citric acid (1 : 2)	3 „
Alcohol	2 „
Sol. silver nitrate (1 : 5)	6-8 „

The alcohol is used to prevent air bubbles. Another excellent formula is the following, which contains albumen. This should be beaten to a froth, allowed to stand for twenty-four hours, and the liquid albumen poured out.

A.

Zinc white	6 parts
Sol. ammonium chloride (1 : 10) ..	1·5 „
Sol. gelatine (1 : 30)	1·5 „
Albumen	4 „

B.

Sol. silver nitrate (1 : 5)	7 parts
Sol. citric acid (1 : 2)	3 „

B should be added drop by drop to A, constantly rubbing in a mortar during the addition. For line work the following is suggested.

A.

Zinc white	6-7 parts
Sol ammonium chloride (1 : 10) ..	1 „
Sol. gelatine	1·5 „
Albumen	4·5 „

B.

Sol. silver nitrate (1 : 5)	4 parts
Sol. citric acid (1 : 2)	3 „
Water	4 „

Mix as suggested above. The wood blocks should be first painted with a very dilute solution of indiarubber.—*Photo. Corresp.*, Oct., p. 463.

A SOLDER FOR ALUMINIUM.

La Science Illustre states that a Norwegian experimenter suggests the following for the best formula: melt 20 parts of zinc, and add 50 parts of cadmium, and then gradually 30 parts tin. Mix well and cast into ingots. It may be used for other metals also. A greater proportion of cadmium gives strength and tenacity, the greatest adherence is given by more zinc, and the best polish by more tin.—*Bull. Belg. Phot., Sept.*, p. 584.

Letters to the Editor.

GLAZING GELATINO-CHLORIDE PRINTS.

SIR,—The method named in last week's issue appears rather troublesome and will take up some time.

I have not had a print sticking since I used the following process, and I have in one or two cases omitted the alum bath.

Take a spoilt negative (the surface of ordinary glass appears harder than that of plate glass), clean it as usual, and rub on it a solution of spermaceti wax, 20 gr. in 2 oz. of benzole. This alone will give a semi-polish, but for the brightest surface, clean this off well with a duster, then dab on French chalk with some force, and clean off with a clean duster lightly applied, and you will not be troubled with sticking.—Yours, etc., R. GILL.

* * * *

NEWCASTLE-ON-TYNE AND NORTHERN COUNTIES PHOTOGRAPHIC ASSOCIATION.

SIR,—Will you kindly permit us to notify through your columns that we purpose holding an international photographic exhibition in April, 1894. We will offer medals in the following open classes:—Landscapes, genre, portraiture, architecture, instantaneous work, enlargements, hand-camera work, lantern slides, and stereoscopic slides; and in a champion division we will offer medals in the following classes:—Landscape, portraiture, and genre. Our prospectus will be out in a few weeks, and I shall be glad to forward one to any intending exhibitor.

I may say that it is our intention to adhere to the regulations of the conference of judges in their entirety.—Yours, etc.,

JAS. BROWN (Hon. Sec.).

31, Market Street, Newcastle-on-Tyne.

* * * *

A DEVELOPMENT QUESTION.

SIR,—I am more than grateful for the practical remarks and helpful suggestions of Mr. Hodges' letter, and will try his recipe at the earliest opportunity. I thought I was careful not to "recommend" the development I mentioned for mountain work, and to state that "without attempting to instruct my superiors I would mention that I use," etc. Still, I think Mr. Hodges must be exaggerating in referring to my method as the "very worst possible," and I am sure he does exaggerate a little in saying that by employing the method I use "the distant mountains and sky would be buried in obscurity." The mist picture, an indifferent reproduction of which accompanied the article, was treated as I mentioned, and I have some six dozen negatives manipulated in like manner. I send a few prints (untoned, because I am short of time), and perhaps the Editor will say whether the "mountains and sky are buried in obscurity." Perhaps it will clear up matters if I state exactly what course I pursued—a course to which I am by no means wedded. I used the stock solution of pyro recommended on Ilford plate boxes, only when making up for use I added but one-third the quantity of water recommended. To one ounce of the solution made up for use, I added from 1½ to 2 grains of bromide of potassium, and commenced to develop with only one drop of ammonia ·880 added. Waited a minute, and added another drop of ammonia, then waited, and so on till the image was up. By the way, there were several printers' errors in the article—Tryfau appeared instead of Tryfan, Crib Gorb instead of Crib Goch, and there was a grammatical error caused by the omission of the letter "s."—I am, etc.,

Colchester, Oct. 27th, 1893. WM. RAISBECK SHARER.

* * * *

PHOTOGRAPHS OF OLD BUILDINGS.

SIR,—I have been moved to write this by seeing the passage in this week's number of the AMATEUR PHOTOGRAPHER referring to the destruction of Nant Mill, and the obstruction of the view by the building of a house. This sort of thing is constantly going on all over England—ugly white stuccoed houses are taking the place of picturesque timbered houses. Of course, this cannot be prevented, but still if the houses themselves cannot be preserved, memorials of them might be.

Could not some society be formed with a depot in each county, where photographs of ancient houses, churches, and castles could be stored, with a short account of noticeable facts and details about them? I am sure that a large number of photographers would contribute photographs of the most interesting objects in their neighbourhood. Of course, the expense and trouble would be considerable, but the expense could doubtless be met by giving lectures and by subscriptions; and a committee of five or six might be formed in each town to decide which were worth recording, and to place them in books where they could be referred to. One good effect it might have in the future would be that when churches were to be restored they will be restored more nearly to their original form than they often are now.

I don't know if this has been proposed before, or whether it could be carried out well.

I know I have not expressed my meaning well, but there may be something worth considering in it.—Yours, etc., L. F. S.

Photographic surveys are in progress with many societies.—EDITOR.

* * * *

FINCHLEY CAMERA AND LANTERN CLUB.

SIR,—I should be glad if you would make it known through your paper that this club meets on the first Tuesday in every month from October to March, at 8 p.m., at St. Mary's Schools, Church End, Finchley, N., for the exhibition of lantern slides by members, etc. All amateur photographers in the district are cordially invited. Further particulars on application to—Yours, etc.,

A. T. CRANE (Hon. Secretary).

1, Melrose Villas, Church End, Finchley, N.

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JUDGES AT LEYTONSTONE.

SIR,—Will you please make known through your columns, that owing to ill-health Mr. Andrew Pringle has been ordered abroad by his medical adviser, and consequently will be unable to assist in the judging of the exhibits sent in to this exhibition. The Rev. F. C. Lambert has kindly consented to take his place, and will act with Colonel J. Gale and Mr. F. P. Cembrano, jun. May I also call the attention of your readers to the fact that Tuesday next, Nov. 7th, is the last day for receiving entry forms?—Yours, etc.,

ALBERT E. BAILEY.

Rose Bank, South West Road, Leytonstone.

* * * *

A BOOK CLUB.

SIR,—There are doubtless many of your readers who would enjoy the perusal and study of "The Portfolio," "Art Journal," and such like, but who are unable to indulge their artistic taste owing to the high price of these and similar papers. I have elaborated a scheme, on a co-operative basis, whereby this privilege may be enjoyed by a limited number at a very small cost indeed.

As new volumes are just commencing, the present is a very suitable time for putting my plan into operation.

Full particulars will be sent on application to—Yours, etc.,

ALPHA.

Painswick, Glos.

* * * *

AND ECHO ANSWERS WHY!

SIR,—Why have we no exhibition in Liverpool? London, Manchester, Southport, etc., have them annually, and yet we have not had one since 1886. I think an exhibition must go a long way to increase the art of photography, and it also gives one the chance of viewing work done by most of the great men, as their works are brought together by this means. Could not one or more of our societies see their way to holding one this year or early next? Surely under proper management it could be made a success, financially and otherwise.—Yours truly, YCREP.

Catalogues.

M. W. DUNSCOMBE (late Braham), 10, St. Augustine's Parade, Bristol. Price 6d.

A well-illustrated price list, containing all photographic requisites.

NEWMAN AND GUARDIA, 92, Shaftesbury Avenue, London, W.

A very complete catalogue of all the specialities of this firm, illustrated by process blocks of results obtained with the same and also other accessories necessary for the hand-camera worker.

OUR LANTERN SCREEN.

A Monthly Supplement to the "Amateur Photographer."

Our Dissolving Views.

Of all innovations made by the P.S.G.B., the removal of the screens and the extra chairs has proved the most paying, as evinced by the increased attendance at the lantern evenings.

At the Central Club last Friday Mr. Birt Acres showed some of his own and Mr. Wellington's slides, and utilised coloured glasses to tint the screen. This was found to be a great relief from the blank white screen, and it is a great question whether a screen permanently tinted would not be a great boon.

The usual outcome of a lantern entertainment on us personally is a racking headache, and this we have always put down to the blank white staring screen and the rapid change from dark to light. Now if the screen was tinted with some neutral colour, this would be avoided.

Of course, it would be necessary to choose a tint which was not inimical to the majority of slides, and we do not think this would be difficult. There are, of course, some slides that are of such a charming (?) tone that they would not look well on any tint, neither do they, for the matter of that, on white. These might be ignored, however.

We should like to know why it is that the uneducated mind always applauds a hard, brilliant slide. We have been particularly struck with this at lantern entertainments. Soft, delicate slides which most good judges would pass as perfect in this respect, the general public, and we are sorry to say frequently a photographic audience, will pass by. Whereas, throw a hard and somewhat chalky slide on, which almost hurts you by its brilliancy, and immediately the applause breaks forth.

The personal enjoyment of a lantern entertainment does not always depend upon the slides. A good lecturer is a *sine qua non*; he can almost make the very tamest show go well. Next to a good lecturer we place good slides, and next to the slides, good neighbours. Sit next to a Sir Oracle, as we have done, and hear his semi-audible oratorical remarks and you wish him further; your enjoyment is almost spoilt. But sit next to a man who sucks peppermint, as we had to, for a short time only—we took care of that—and you wish the oxygen would blow up almost. Anything as long as the peppermints would be annihilated.

Our Prize Slides are on their rounds, and are hooked up to next April, and we have yet a lot of applications from various societies, which we have not acknowledged or attended to. Will the energetic and hard-worked honorary secretaries take this as an acknowledgment, and also our assurance that the very first chance we get, probably when the days are a few hours longer, they shall be allotted a date.

The A B C of the Lantern.

Whilst triple condensers are a great advantage, and should be,

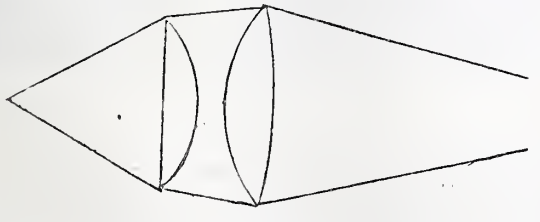


Fig. A.

and probably will in time be, more generally used, yet like most improvements they take some time to be adopted. Whilst on the subject of condensers it would be only right to mention that Mr. Traill Taylor, in his capital little work, "The Optics of

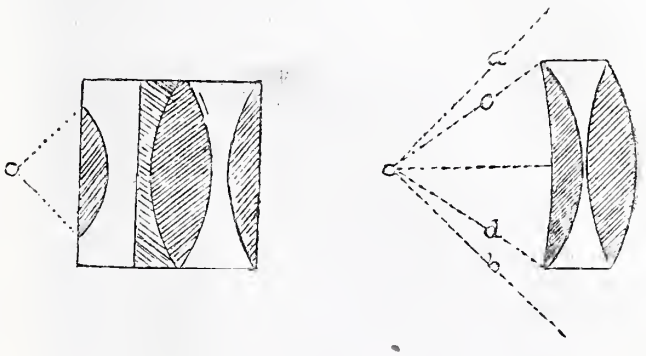


Fig. B.

Photography," gives several diagrams, which we reproduce with a precis of his notes. Fig. B was devised many years ago by him, and, as will be seen, consists of three plano-convex lenses, the centre being achromatic. This is expensive to construct. Grubb constructed the condenser, fig. C, in which A is a piece of plain glass, which acts as a condenser, B is a plano-convex single lens, C a plano-convex achromatic, and D an over-corrected combination, whence the rays diverge and are again made convergent by the large lens.

Mr. Taylor recommends fig. A as the best form of a double condenser, which is a plano-convex with its flat side to the light, and the second a crossed lens.

Nearly all condensers are made of crown glass, but this is decidedly greenish in tone, and it would be preferable to have them made of optical colourless flint, as in this case the lenses would be thinner, and therefore less liable to crack, they

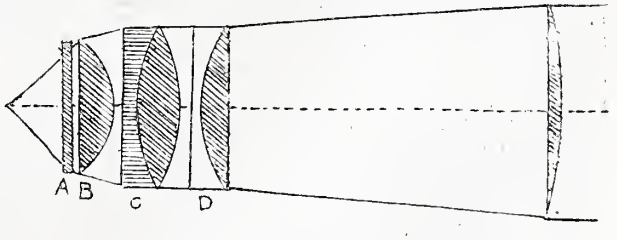


Fig. C.

would be freer from colour, and therefore allow more light to pass through. Condensers need not be optically perfect; striæ or bubbles are not of much moment, except that the lens next the slides should, if possible, be free from bubbles.

A most important point in connection with condensers is that they should be loosely mounted in their cells, so that the glasses can be easily turned round; this allows room for expansion, and they are then less likely to crack. A cracked condenser is a nuisance. Although it is said that if the crack be perpendicular it will not show on the screen, we believe that few condensers are so obliging as to crack perpendicularly or straight.

Our Monthly Lantern Slide Competition.

NO. 53—LANDSCAPES.

WE are sorry to say that the average quality of the slides in this Competition is distinctly inferior to those sent in to last year's Competitions. It is rather difficult to account for this falling off in quality, because the Competitors have had ample time in which to



"On the Brent, near Hanwell."
SILVER MEDAL. *J. M. C. Child.*

get their work ready. The appearance of a great many of the slides would indicate that under-developed negatives wanting in detail and vigour have been used in their production, with the inevitable result that the slides are flatter, weaker, and poorer in quality than the negatives from which they were produced. These Monthly Competitions are intended for beginners, and we assume, therefore, that many of the competitors have not had a large amount of experience in slide-making; this being so, we trust they will take our suggestions in good part. We would recommend that they should take up the work under conditions as favourable to the production of good slides as possible, success being then so much easier of attainment. To this end a negative, or negatives, of good quality, and fairly vigorous—such, for example, as would give a plucky print on albumenised paper—should be selected, and the slides should be developed with hydroquinone developer of normal strength. If the first slide should not prove satisfactory, fresh exposures should be made, longer and shorter, using the same strength of developer and the same negative, until a better result is obtained. In this way, with very little observation, the effect of under, over, and correct exposure will be readily learnt, and far more advantage gained than by flying first to one developer and then to another. First experiments in slide-making should be made by contact printing, and not by reduction, and one of the slower lantern plates should be chosen.

We have also to find fault with several competitors for the slovenly manner in which they have finished off their slides, the work of mounting and binding having been in several cases very carelessly performed. We shall take this matter into consideration in future in awarding marks for technique. We do not know, of course, but we strongly suspect that several of our competitors did not take the trouble to put their slides in the lantern in order to judge their effect on the screen before submitting them for competition. Had they done so we think in one or two casss the slides would not have been submitted. It is an extremely difficult matter for even an expert to pass a critical opinion on the merit of a lantern slide by simple inspection, and one that the inexperienced should not attempt. We advise every slide-maker who aspires to the production of good work to possess himself of a lantern, and subject his slides to a careful scrutiny on the screen before sending them in to a public competition.

Silver Medal—J. M. C. Child (Kew).—(1) "On the Brent, near Hanwell." Con., Ilford, hydroquinone. (2) "A Surrey Common." Con., special, hydroquinone. Negatives composed with special view of making slides by contact. The slide which we reproduce is a charming study, reminding us of one of Constable's landscapes. The composition has been very carefully considered, and the result is very pleasing; credit is due to Mr. Child for this fact, one which is often neglected in printing by contact, much to the detriment of the slides from an artistic point of view. No. 2 is also good, but the foliage is just a trifle snowy. This might be avoided by slightly lengthening the exposure, the original negative being probably rather strong in the high lights. The technique of both slides is excellent.

Bronze Medal—H. D. Morgan (Worcester).—(1) "A Mountain Pool." (2) "Mountain and Moor." Red., Thomas, quinol. Two good slides, technically and artistically; though the colour is rather an unusual one, it is very suitable for the subjects, which have been well selected.

Certificate—J. F. Russell (Hexham).—(1) "Warden Bridge." Con., England's, pyro-ammonia, long exposure, slow development. (2) "Linnold's Mill" Con., Thomas's, ditto. The technique of both slides is good. No. 1 shows what careful treatment will do with a simple subject. Tone excellent. The companion slide, though good technically, entirely lacks pictorial interest.

CLASS I.

*** Red. = reduction; con. = contact.

S. DEAN (Huddersfield).—(1) "Hoar Frost:" con., Ilford, amidol; negative on Ilford ordinary. (2) "The Old Lock-house, Calder Canal:" con., special, amidol; negative on Ilford ordinary. Two good slides. The first, however, could not be fairly classed as a landscape subject, and therefore scarcely came within the competition. The second slide, "The Old Lock-house," both technically and artistically, is an exceedingly fine one; the shadows are well rendered and full of detail, gradation perfect.

ELLIS, J. W. (Liverpool).—(1) "Eastham Wood:" red., England rapid chloride, hydroquinone. (2) "A Quiet Pool:" ditto. Good



"Mountain and Moor, Switzerland." *H. D. Morgan.*
BRONZE MEDAL.

slides pictorially, showing careful study of composition and light and shade. Technically the slides are too dense, particularly "The Quiet Pool." The hydroquinone developer has probably been used too strong. A full exposure and a more dilute developer would improve matters in this respect.

COLEMAN, G. A. (Hull).—(1) "A Wayside Study:" con., Thomas,

quinol. (2) "A Yorkshire Village:" red., Cadett, pyro. Two pretty slides. The former, however, is on the borderland between landscape and figure study. Technique in both cases good.

W. DAWES (Plumstead).—(1) "Ploughing:" con., Ilford, hydroquinone. (2) "A Kent Lane:" ditto. Fair slides. On No. 2 the tree trunk coming just behind the man in the cart rather detracts from the pictorial quality of the slide.

CLASS II.

STABB, J. (London).—(1) "Lynmouth:" con., Mawson, pyro-ammonia. (2) "Clovelly:" do. Both these slides are hard and chalky. A fuller exposure and a weaker developer would probably lead to better results. From an artistic point of view "Clovelly" is spoilt by the bare, uninteresting foreground, in which the post is all too prominent.

HANCOX, R. (New Malden).—(1) "In the Wild Woods:" con., Ilford Alpha, hydroquinone; "a view in Coombe Woods, taken on a very dull day." (2) "In the Farmyard:" con., Paget P.O.P., toned as recommended; "a view near the watereress beds at Old Malden." Inferior. No. 1 is a very unpleasant brick-red colour, unsuited to the subject. Toning in the combined bath would be a remedy. No. 2 is very flat and lacks vigour. Probably the negative lacks vigour, which is requisite for these plates.

GRAY, J. (London).—(1) "View of Ambleside:" con., Thomas, metol; "taken in setting sun." (2) "View of Ambleside": con. Alpha, hydroquinone; "distance was hazy." Neither of these views does justice to the very charming locality in which they were taken. Technically, No. 1 is the better; No. 2 is over-dense and the shadows rather clogged.

GETHEN, C. (Hereford).—(1) "Castle Green, Hereford:" red., Ilford, hydroquinone; "taken 7 o'clock a.m. Light and shade." (2) "Founnope Mill:" red., Thomas, hydroquinone. No. 1 is hard and chalky. Give a fuller exposure, and use a weaker developer. No. 2 is a very pretty slide, and its technique good. We have, however, no sympathy with oval mounts—both these slides would look better in oblong mounts with square corners.

BOOTH, W. (Cardiff).—(1) "The Roadside Spring:" con., Ilford special, metol; "Ilford plate for negative, developed with pyro soda." (2) "The Farmer's Boy:" con, do. Again, we must protest against figure subjects being entered in a landscape competition. As these slides should not have been submitted in this competition, we refrain from criticising them.

DENNIS, P. H. (Finchley).—(1) "A Forest Footpath:" con., Thomas, hydroquinone. (2) "Amongst Tall Pines:" do. No. 1 under-exposed, and the oval mount is unsuited to the subject. No. 2 is rather heavy. Tree subjects of this character seldom make good photographs.

DAVIDSON, W. N. L. (London).—(1) "After a Morning's Graze:" con., Ilford special, hydroquinone. (2) "The Pond, Bonchurch:" red., do. No 1 a good cattle study—slide rather heavy. Try again, using the developer at half strength, or substitute amidol for hydroquinone. No 2 is a capital slide, good gradation, soft, and delicate.

ISAACSON, J. (Liverpool). — (1) "Brokweir-on-the-Wye": con., Thomas', hydro, "taken from a half-plate." (2) "Grange over Sands," do. The upper portion of No. 1 suffers from halation, but the water is charmingly rendered. No. 2 is thin, and an oblong matt cutting out the railway would improve the composition.

PARKER, J. E. D. (Liverpool).—(1) "A Welsh Cottage": con., Mawson, pyro-ammonia. (2) "Neddy," do. Very poor slides. Thin, flat, and foggy. Try the effect of a shorter exposure, and use hydroquinone. Neddy, we may remark, is scarcely a legitimate subject for this competition; even that patient quadruped would resent being called "a landscape."

BLAKE, A. H. (London).—(1) "The Village Street:" red., Towe, P.A. (2) "The Old Way into the Wood:" con., Rd. Towe, P.A. Two good slides, clean and careful work. The tree trunk in No. 2 is a little too much *en evidence*, and the village scene would have been improved by masking out the edge of the house on the right.

PARKER, H. (Birmingham).—(1) "A View at Sheldon": con., Ilford Special, pyro ammonia. (2) "A Cottage at Sheldon": do. "The negatives taken on a very dull day." Flat and weak. If the negatives are thin, give a short exposure and use a well-restrained hydroquinone developer.

DOCKREE, E. (London). — (1) "Cobham Lane, Kent": con., Thomas, Amidol, and toned. "Negative taken in pouring rain." (2) "First Touch of Winter": red.; Paget; Amidol. No. 2 a very charming slide technically and pictorially, delicate and soft yet vigorous. It received the full number of marks, but was heavily handicapped by its companion, which was hard and crude. Foliage exhibiting deep shadows is seldom happily rendered when taken in bright sunshine.

AVELING, D. J. (London).—"Brasted Park": con., Mawson, pyro-ammonia. Do. Under-exposed and probably printed from hard negatives. Try fuller exposures and use Amidol instead of pyro, there being less tendency with it to give hardness and opacity.

DAWSON, R. M. (Ealing).—(1) "Road to Westwater": con., Thomas' Pall Mall, hydroquinone; "negative taken with Beck's Frena on Edwards' films. First attempt at both negative and slide making." (2) "Gardens, Holmnok Hall": do. Very good for first attempts. We shall hope to see some more work later. If these are "snap shots," as from the information given we assume they are, they are capital work for a beginner, and plenty of detail has been got from the negatives.



CERTIFICATE. "Linnold's Mill, Hexham." *J. F. Russell*

Birmingham.—Ordinary meeting 24th ult., Mr. G. F. Lyndon in the chair. Mr. Chubb read a paper entitled "The Naissance of Art in Photography," which was written by Mr. Andrew Pringle, and appeared in the *Studio*. He also read a number of letters by eminent artists of the day, in reply to a question addressed to them by the editor of the *Studio*, as to whether they considered photography had been on the whole a help to art or not.

The Photographers' Benevolent Association.—October 17th meeting at the rooms of the Photographic Society of Great Britain, 5A, Pall Mall, S.W., Mr. A. Mackie in the chair. The committee confirmed a loan of £15 granted on September 28th by a sub-committee in a case that was partially considered by a full committee on September 15th. The following other cases were considered:—(1) A discharged soldier, who had been a military photographer, and who, since his discharge from the army, owing to broken health, had been working as a carbon and process photographer, until disabled by bichromate disease, applied for immediate assistance, and a loan of sufficient money to purchase camera and lens. Owing to illness and time spent in hospital he was penniless. The committee granted a small sum in instalments for immediate subsistence and instructed the secretary to purchase a second-hand whole-plate camera and lens. Applicant had secured permits to photograph in several police barracks and workhouses. (2) Applicant, who was assisted four years ago with a grant of £5, applied for further small assistance until he should obtain situation. A grant of £2 was made. (3) An operator, to whom grant of £5 was made on September 15th to enable him to reach a situation, applied for further £5 in order that his wife and family might reach him, and so reduce living expenses and enable him to repay the whole loan. Amount was granted. (4) An operator, who was assisted last year, and who during the spring and summer has been in several temporary situations, some of which were found by the Benevolent, made application for further assistance. Secretary reported that he had granted immediate relief to the extent of £1 in instalments, and that as the applicant had obtained a month's engagement the application was withdrawn. Committee confirmed secretary's advances. Donations were acknowledged from the following:—London and Provincial and Photographic Club outing, 9s. 1d.; Messrs. Henry Dixon and Son, £2 2s.; Brighton Photographic Company, per Mr. Wicks, £1 16s. 6d.; A Friend of the Benevolent, £1. Mr. Leon Warnerke was accepted as a subscriber.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

(*Continued from page* 276.)

CHAPTER IV.

ON THE METHOD OF MAKING GELATINE EMULSION.

(I.) PROPORTION OF SOLUBLE BROMIDE SALT, ETC., TO SILVER NITRATE.

IF bromide of potassium and silver nitrate are mixed in the presence of gelatine, the former should be kept in excess; free silver nitrate will produce decomposition (fogging) in cooking. An absolutely exact saturation of the bromide and silver salts is good theoretically, but not possible practically; the bromide salt is, therefore, kept in excess. The same applies to chloride and iodide emulsions.

For the accurate chemical conversion of 170 parts of silver nitrate into bromide of silver, and into chloride or iodide of silver respectively, the following equivalent quantities of salts are necessary:—

119·1	parts by weight	of bromide of	potassium (KBr).
98	,,	,,	ammonium (NH_4Br).
166·1	,,	,,	iodide of potassium (KI).
145	,,	,,	ammonium (NH_4I).
74·6	,,	,,	chloride of potassium (Cl).
58·5	,,	,,	sodium (NaCl)
53·5	,,	,,	ammonium (NH_4Cl).

One must remember that from mixtures of iodide, bromide, and chloride of potassium, on the addition of silver nitrate, the iodide will first combine with the silver, then the bromide, and lastly the chloride.

(II.) MIXING PROPORTIONS IN GELATINO-BROMIDE OF SILVER.

What should be the proportion of bromide of potassium to silver nitrate in practice? Dr. Eder strongly advises, in consequence of a good deal of experience, 5 parts of silver nitrate to 4 parts of bromide of potassium (= 3·3 parts bromide of ammonium). This is the same proportion which he decided as the best some years ago, (1880) as the result of his experiments carried out with Captain Toth. Bennett recommended 7 parts of bromide of ammonium to 11 parts of silver nitrate, which Wilson also accepted; Abney mixes the two in the proportion of 10 : 7½, and Burton as 21 : 12½.

Therefore it appears that Dr. Eder uses more soluble bromide than is now usual and for the following reasons:—(1) With considerable quantities of bromide of potassium in excess, fog does not easily arise with long cooking or treatment with ammonia; (2) the ripening by digestion can be driven further than with a small excess; (3) the extraordinarily finely divided bromide of silver, which dissolves in the bromide of potassium on heating and is precipitated by cooling, as well as by dilution with gelatine and consequent washing, acts favourably on the plates; (4) errors cannot so easily occur by careless weighing on insensitive balances. That the excess of bromide of potassium acts favourably Abney confirmed a long time after Dr. Eder's proportion was published. He stated that the proportion of 20 parts of silver nitrate to 15 parts of bromide of potash gave a much more sensitive emulsion by the boiling process than the proportion of 20-12.[1] The proportion 20-15 is, however, almost identical with that of Dr. Eder, namely, 20-16. Abney explains this by saying that bromide of silver is soluble in bromide of potassium and separates out by cooling in yellowish crystals, which give, by washing, green highly sensitive bromide of silver. According to Newberry, the proportion of 32·5 of silver nitrate to 28·5 bromide of potassium is the best for the boiling process; less bromide produces less sensitiveness, more bromide (*e.g.*, 30) also gives a less sensitive and flat emulsion. (Eder's "Jahrbuch," 1888.)

If an emulsion contains a quantity of excess of bromide of potassium, which considerably oversteps the above proportion, flat and indeed foggy emulsions are obtained by the boiling process. Emulsions which contain no excess of soluble bromide, in which the bromide of silver has been separately precipitated and washed, also ripen afterwards when heated. They become more sensitive but fog easily.

(III.) ON THE PRESENCE OF DISSOLVED BROMIDE OF SILVER IN THE GELATINE EMULSION, AND ITS INFLUENCE ON THE QUALITIES OF THE SAME.

It has been already mentioned that the bromide of silver, even if in minute traces only, is soluble in water, and that especially of the finely divided bromide of silver which is contained in the "ripened" emulsion, considerable quantities seem to be dissolved. The small quantity of the bromide of silver dissolved is somewhat increased by the presence of gelatine. Indeed, gelatine considerably retards the precipitation of bromide and chloride of silver. This, Hardwick knew, in 1860.[2] The experiments which, at Dr. Eder's suggestion, Herr Hecht undertook clearly showed this. Pure chloride of sodium and gelatine were dissolved in water, and then solution of nitrate of silver, of definite strength, added, till a precipitate was formed. It gave the following results[3]:—

100 parts of a 1 per cent. solution of chloride of sodium dissolved at 30 to 40° C., ·00954 AgCl.

100 parts of a 1 per cent. solution of chloride of sodium + 1 per cent. gelatine dissolved at 30 to 40° C., ·59763 AgCl.

100 parts of a 1 per cent. solution of bromide of potassium dissolved at 30 to 40° C., ·01099 AgBr.

100 parts of a 1 per cent. solution of bromide of potassium + 1 per cent. gelatine dissolved at 30 to 40° C., ·05950 AgBr.

Therefore it appears that gelatine prevents the precipitation of considerable quantities of chloride or bromide of silver, which consequently remain dissolved in the mass. By cooling, or standing for a long time, a minute quantity of the dissolved silver salt separates out.

The quantity of the bromide of silver dissolved in the emulsion can be further increased by other means—for instance, by ammonia. Ammonia, as is well known, dissolves bromide of silver. Gelatino-bromide of silver prepared by the addition of ammonia thus contains dissolved bromide of silver; it yields, however, no silver to water in spite of washing, consequently it appears that the dissolved bromide is pertinaciously retained by the gelatine and remains in the emulsion. By the addition of ammonia the sensitiveness is increased to a marked degree, but especially the intensity and vigour of the negatives, produced with such emulsion. Abney remarked in April, 1881, on the solvent power of the alkaline bromides on bromide of silver; he compared this action with that of ammonia. He noted that bromide of potassium does not dissolve so much bromide of silver as ammonia.

(IV.) ON THE FORMATION AND BEHAVIOUR OF THE VARIOUS MODIFICATIONS OF BROMIDE OF SILVER IN EMULSIONS.

If an aqueous solution of silver nitrate be precipitated with an aqueous solution of bromide of potassium, a coarse flocculent precipitate is formed, which easily settles to the

[1] *Photo. News*, 1881, p. 198.

[2] *Journal Phot. Soc. of London*, vol 6, p. 116.

[3] *Bull. de l'Assoc. de Phot.*, 1881, vol. 8, p. 19.

bottom. This precipitate can be distributed into a fine milky emulsion by continual shaking with a warm solution of gelatine. The emulsification is much more easily effected if gelatine be also present during the mixing of the bromide and silver salts. If one precipitates bromide of silver from cold aqueous solutions without gelatine, etc., a compact coarse precipitate is obtained, which can be easily washed on the filter. If this be added to a warm solution of gelatine, and shaken, it is converted into a fine emulsion. Under these circumstances the bromide of silver behaves differently, according to whether it has been precipitated in the presence of excess of soluble bromide or excess of silver nitrate. The difference is noticeable even if the bromide of silver has been ever so carefully washed. The bromide of silver precipitated in excess of nitrate of silver, and then washed, is a little (sometimes considerably) more sensitive and works more vigorously than that precipitated with excess of bromide. Such an emulsion is gradually improved in its photographic character by continuous digestion at 30-40° C., since it gives more vigorous negatives. The negatives are very thin after twenty-four hours' digestion; after two days' considerably better, and the intensity improves up to the sixth day.[1] At the same time the grain becomes coarser. Up to the present, plates have not been prepared by this method so sensitive as is possible by emulsification in the presence of gelatine. If one precipitates ammoniacal solution of silver nitrate, with bromide of ammonium in simple aqueous solution, a very fine bromide of silver is obtained, which, added to gelatine, gives indeed a creamy emulsion, but less sensitive than an emulsion prepared according to Bennett's process.[2] For other similar processes see Part II.

The coarse flocculent bromide of silver is useless photographically because it gives uneven films and is very insensitive. Captain Tóth and Dr. Eder once heated such a coarse flocculent bromide of silver in glycerine as high as 100° C. for more than half an hour, and after the addition of gelatine, a test plate, developed with ferrous oxalate was still much less sensitive than the most insensitive "unripened" fine powdery emulsion. On heating the coarse flocculent bromide of silver prepared at a low temperature with gelatine to 50-60° C., the same is distributed in most cases, and gives a very fine emulsion. If the mixture has an acid reaction the fine distribution takes place, as already mentioned, more slowly than in the presence of ammonia.

The increase of sensitiveness of gelatino-bromide of silver by "ripening" will be treated of later on.

V. Formation of Iodide of Silver Emulsion.

Iodide of silver is only satisfactorily emulsified in solution of gelatine if plenty of gelatine be present; in thin solutions flocks separate out. If, however, the solution of silver is squirted in in a thin stream by means of a syringe, or if gelatine be added to the iodide of potassium as well as to the nitrate of silver before mixing, fine emulsions are obtained.

According to Schumann, the pale yellow precipitate, which is formed by precipitation from silver nitrate in excess of iodide of potassium, is more slowly soluble in hyposulphite of soda than the darker kind precipitated with excess of silver nitrate; in the form of gelatine emulsion both are, however, equally slowly soluble.[3]

[1] Dr. Székely, *Photo. Corresp.*, 1880, vol. 17, p. 46.
[2] Fabre, *Photo. Mitth.*, 1880, vol. 16, p. 254.
[3] *Photo. Wochenbl.*, 1884, p. 321.

VI.—Formation of Gelatino-chloride of Silver Emulsion.

Chloride of silver usually forms, in the presence of gelatine, flocculent precipitates, and a fair amount of gelatine is needed to make the liquid tolerably thick, so that fine emulsions may be formed. It is emulsified also with greater difficulty than bromide of silver. In the presence of ammonia fine chloride of silver emulsions are easily formed. Usually gelatino-chloride of silver films are, after drying, strongly transparent, in spite of which they give vigorous images.

CHAPTER V.

EXCESS OF SILVER NITRATE AND OTHER SILVER SALTS IN GELATINE EMULSION.

The addition of an excess of silver nitrate to an emulsion during its preparation is very disadvantageous. It is decomposed by long heating with the gelatine, and gives then red fog; with boiling the reduction takes place at once, and then the whole emulsion becomes brown.

The researches on the behaviour of free silver nitrate in gelatine emulsion are old. Since the favourable sensitising action of this salt was known in collodion emulsion, it was tried also in gelatine emulsion, and the first experiment with such a gelatine emulsion was made in 1871 by the discoverer of the process, Dr. Maddox. Parr made more accurate statements in 1877. He found that washed gelatino-bromide of silver, prepared with excess of soluble bromide, worked clean, but was less sensitive than the same emulsion which had been mixed with a very little solution of nitrate of silver. The latter was much more sensitive, but was decomposed after a week, since, in developing, the plate became covered with red fog. Berkeley also made experiments in this direction. It was soon found that a gelatino-bromide of silver emulsion was more sensitive if it contained some excess of silver nitrate, but was quickly decomposed, and, at the latest (a week), gave, when developed with pyrogallol, red fog, especially if the quantity of nitrate of silver was not very small. (Parr, 1877[1], Berkeley[2], Monckhoven[3].) In connection with this question Stosch found that ordinary gelatino-bromide of silver dry plates became considerably more sensitive if bathed in a mixture of 100 parts of alcohol of 85 per cent. (absolute alcohol), 1 to 2 parts of a solution of nitrate of silver in water (1 : 15), and 10 parts of ammonia; after three or four minutes the plate should be taken out and dried, which at the most takes about five minutes. A plate thus treated becomes four or five times more sensitive.[4] Vogel as well as Stosch found, that after a longer time (about twelve hours) the sensitiveness sank to the original degree, whilst the silver nitrate gradually and spontaneously decomposed. According to Graeter[5] an ordinary washed emulsion (in the form of a jelly) becomes very sensitive if bathed in a tolerably concentrated solution of ammonio-nitrate of silver and then washed. Most emulsions then give fog.

Eder and Toth repeated the experiments with highly sensitive bromide as well as bromo-iodide plates,[6] and found that the sensitiveness of the same was increased by their being bathed in an alcoholic solution of silver nitrate, with or

[1] "Year Book of Phot.," 1878, p. 93.
[2] *Photo. News*, 1879, p. 195, and 1880, p. 202.
[3] *Photo. Archiv.*, 1880, p. 195.
[4] *Photo. Mitth.*, 1881, vol. 18, p. 70.
[5] *Photo. Corresp.*, 1883, p. 165.
[6] *Photo. Corresp.*, 1883, p. 165.

without ammonia. They also found that chlorate[4], citrate[5], and acetate[6] of silver behaved in the same way. Fuming the silvered plates with concentrated ammonia immediately before exposure is favourable. The plates are then somewhat more sensitive and develop with vigour.

Eoside of silver, as well as erythrosin silver, produce a considerable increase of sensitiveness of the bromide of silver emulsion to yellow without at the same time reducing the sensitiveness to white light. (See orthochromatic plates.)

At the Dudley Gallery.

(SECOND NOTICE.

BY DEM KRITISCHEN AUGE.

IN our last review of the Photographic Salon we fonnd it was time to close "the critical eye" at the western side of the gallery, having many and considerable subjects whereon to dwell at a more convenient moment. Now we find onrselves at the end wall, Mr. Bergheim's wall, if we may so call it, studying Herr Buschhek's "Head of a Painter" (No. 132), and "A Tiroler," by Professor Watzek, of Vienna. The latter is a good head of a typical Tyrolese peasant, a rugged face under the felt hat, "with its feather stuck upon it," as the song says, but not a new departure in the delineation of character.

Robert Terras sends in one picture only, a domestic conventionality, cleverly lighted, entitled "The Ghost Story." It does not appeal very strongly to us, but is evidently a favourite with the general public. In Nos. 138, "Children Playing," and 159, "A Village Street," we have two pleasing pictures by Dr. Julius Strakosch, in very warm sepia; and in 142, "Twilight," Arthur J. Golding has a very good study, low in tone as we would have such a subject, and admirable in selection and manipulation. Mr. J. S. Berghcim is well represented at this end; too well, if the truth be told, considering the similarity of his subjects and the sameness in treatment. Had half the number been hung, his exhibit would have been considerably strengthened; still, as a whole the photographer, amateur or otherwise, can learn much, in the way ot lighting and graceful pose and in getting softness into white draperies, from Mr. Bergheim. No. 139, "Awakening," is good in spite of the unpleasant texture of the paper on which it is printed, but "Gazalleli" and "Helen" please us better. No. 155 is a daring attempt at photography in the semi-nude, to which Mrs. Grundy in her most aggressive mood is hardly likely to take exception.

Karl Greger comes to the front with a new departure; we have hitherto known him as a worker whose *technique* was beyond reproach, a producer of miniatnres, which, although pleasing to the eye, were—well, lct us say pretty pictures rather than serious efforts at picture making. In the present exhibition he has shown what he can do with larger work on rougher medium than he has used heretofore, and the results are eminently satisfactory. His two pictnres of Bosham (Nos. 150 and 152) are charming, as is also "Bury Holme, Rhossili Bay," on the next wall, in spite of the headland in the latter one being too dark in tone. The effect of a striking cloud and its luminous reflection in the shallow waters of the shore more than compensate for it. If we are to find fault with any of his exhibits, it will be with "Silver Shore," in which the appearance of the ribbed sea sand is too hard and mechanical to be pleasing to us. Mr. Greger has, however, made a step in the right direction, and we congratulate him on his show at this gallery.

Lower down is a large photographic rendering of a bas-relief, "Endymion," by Frederick Hollyer, a perfect example of the capabilities of photography in this especial branch. So well is it done that the sculpture seems to stand up from its background in almost bewildering intensity. We shall see Mr. Hollyer's work again further on, and before treating upon Mr. Horsley-Hinton's main exhibit on the next wall we wonld point out a charming little pastoral of his in No. 141 ("A Pasture by the Sea"). Wc were contemplating this picture when someone immediately behind us complained that the sheep (being newly shorn) were too lean and scraggy. It strnck us that this opens out a new field of criticism. Probably the gentleman was engaged in the live meat trade, and objected from a strictly technical and business point of view to mutton in this attenuated condition being hung at all. There may be something in this new school of criticism, and we will consider its further development.

Harry Tolley seems to have one picture only in this exhibition, and "A Sunset, Killarney," it will be charitable to assert, is not up to his usual standard, being a very ordinary production of a photograph taken against the sun, without any regard to the relative value of tones.

Here, in this corner, are some excellent portraits by William Crooke, of Edinburgh. Particnlarly to be commended are No. 160, "Portrait of Miss Gratton;" 178, "Professor Blackie;" and a clever imitation of an old engraving, even to the lettering, the mount, and frame, in 188, "David Bispham." Mrs. Myers' portrait of "Miss E. Chanter" is very good also. and another of "Mr. Gladstone" will commend itself, although the Premier is not wearing his accustomed and genial expression, or that with which he is usually represented. So much the more is Mrs. Myers' portrait of him unconventional, but it is at the expense of the sitter.

For daring unconventionality, however, commend us to "The Lone Cypress" of Clarence B. Moore; if it were picturesque as well as unconventional its prodnction might have been pardoned. but it is simply a *bizarre* effect on very rough paper, displeasing—to put it mildly—which might very well have given place to better work that has in all probability been rejected.

Mr. Horsley-Hinton's work holds the place of honour in this "bay," and all his pictures are worth serious study from their poetic and tender treatment. Look at his "Edge of the Forest,"

> "In the hazy golden gleam
> Of an idle summer's day,"

and note the knowledge of composition he has brought to bear upon the arrangement of his bit of common furze, the edge of the forest beyond, and over all a summer if a stormy sky. We know the bit of forest very well, yet it would never strike us to ask onrselves where it was if it were not so. So much for idealism.

Then, again, in "The Threshold of a Winter's Day" we feel even greater pleasure; a bit of marsh land, with a knarled and twisted tree hending over a little brook swollen with winter rains; the sun, sinking behind heavy clouds that are pregnant with coming snow, lighting up the rippling water with its dying gleams.

"In Earliest Springtime" also shows singular delicacy and softness in the treatment of tender bits of forest land with rushy pools and coarse grass so common to parts of Epping and Burnham Beeches.

Altogether Mr. Hinton has given us nothing better since his "Reedy Ways," and if we have to quarrel with him it shall be on the colour of his prints, which, in the daytime at least, is too purple to be pleasing.

Bernard Lintott has two Thames pictures in Nos. 187 and 94, both very effective, especially the one showing the Tower Bridge in the distance. What picturesque subjects these wherries and barges make, particularly in the murky atmosphere prevalent in the lower reaches of the river, and what a happy hunting-ground this same river should be to the maker of pictures!

Baron Albert Rothschild has some dainty examples of his work, No. 173 being a very charming subject if a somewhat conventional composition, and in 185 a good study of a girl's head of the 16th century.

In this bay also there is to be fonnd a "curio" (for want of a better title) by Bernard Alfieri, called "A Dutch Landscape." A well-known photographer enquired the other day what it was, "for," said he, "if it is an oil painting it is very bad; if it is a photograph it is worse." In reality it is nothing more nor less than a carbon image transferred to a yellowed canvas in more or less successful imitation of an "old master," and it puzzles us to know what the committee saw in it to admit it. Practical jokes of this description have no place in a serious exhibition, and we notice that this one has been wisely kept ont of the catalogue. While we are on the subject of practical jokes we may mention that Rowland Briant sends many and curious examples of photographic "art" which are altogether beyond our comprehension for the present. We pass them more in sorrow than in anger, taking off our spectacles to give them a rub over, in case there may be something wrong with our powers of vision, for, like a man who has dined too well, we see double. Nevertheless, we can appreciate "A Silver Birch" by the same worker; silver it is with sparkling hoar-frost, crisp and clearly defined; a pleasing little

[4] *Photo. Corresp.*, 1881, p. 137.

[5] Ordinary gelatine plates are bathed for three or five minutes in a well-filtered mixture of 100 parts alcohol and ½ to 1½ parts of solution of citrate of silver. The citrate of silver solution is prepared by dissolving 10 parts of citric acid and 10 parts of silver nitrate in 100 parts of water. The plates should be placed on blotting paper in a place absolutely free from dust, and dried, which takes place in a few minutes. Such plates will keep six days; and perhaps longer.

[6] According to Ducos du Hauron, plates bathed in a solution of 1000 parts of water, 5 parts liquid acetate of ammonia, 10 parts of silver nitrate, then washed and dried, should not lose their sensitiveness by the washing, but keep better.—*Photo. Archiv.*, 1881, p. 175.

picture, somewhat marred by its mount and frame. We rub our spectacles again when we come to 204, "Golden Morning." Why golden morning? One would expect from its title to see some sort of sunshine in it, instead of which there is a sombreness of tone that is depressing. Cannot sunlight be got into a photograph? Well! look at Eustace Calland's "Orchard in June" or his "Harbour, Mid-day," and admit that no further argument is necessary.

The Rev. F. C. Lambert sends in "After Glow," a little thing on rough paper that would have been satisfactory enough under different treatment. The landscape is soft and diffused in focus, tending even to the "fuzzy," but the sky beyond is so painfully sharp and hard as to destroy the effect intended.

George Davison has secured full representation, and rightly so, on the walls of the Dudley Gallery. Most of his exhibits are excellent examples of that school he has done so much to bring into prominence, and we witness a new departure in the utilisation of calico and linen fabrics that in several instances adds great effect to his pictures. This fabric, be it said, has been on the market a considerable time, and we are surprised none of the leading workers have utilised it before.

In Mr. Davison's work we take exception to No. 230, "Blythburgh Common," as a picture taken in strong sunlight (*vide* the lighting of the sheep), and "snnned down" to the wrong tone instead of being "sunned up" to the right. In a measure, also, we object to another of his sheep pictures (224) on account of its woolliness. We do not mind woolly sheep at all, but we protest against the loss of form in trees, in sheep, in everything, in order to depict a woolliness which, when obtained, is untrue to Nature as we see it even in her softest moods. Nor do we greatly appreciate (in this particular print) No. 217, the shadows of which in trees and in river are merged in general blackness, so that one cannot tell where the one begins and the other leaves off; but we can honestly and cordially admire his (221) "Wivenhoe," a commonplace subject treated with a masterly hand, and his "Weed Burners," wherein the figures stand out against the smoke of the blazing twitch in an atmosphere one almost feels in the nostrils. There are several more pictures of Mr. Davison's which call for no special mention, except that No. 226, "Path Over the Sandhills," a strong composition, would have excited more attention had there been no "Sand Dunes" by B. Gay Wilkinson, jun., in the years gone by.

Mr. Davison's exhibit, be it understood, is nevertheless a very fine one, and as he has shown nothing of importance recently, it was worth waiting for to get together such a representative collection.

W. Crofton Hemmons has two little pictures, "After Sundown" (229) and (175) "Moorland; Bringing Home the Sheep." The latter, a very charming landscape, we should have noticed before, as it is at the further end of this wall. The title is its best description after all, and we can add nothing to it except that it pleases us greatly.

In 234 we have another of Eustace Calland's solved problems, entitled "Winchilsea Mill." This worker seems to delight in setting himself difficult tasks, and it is only justice to him to say that he generally achieves them, whether it be the delineation of white hawthorn against a blue sky, or an orchard in June under similar conditions. In the present instance he has set up a windmill at Winchilsea—but stay, to be topographically accurate, we will say he found a mill at Winchilsea and decided to photograph it against the sunset, preserving, at the same time, the true relative tones of foreground, mill, and sky. Which he presently did. We neither know nor care whether the resulting picture is from one negative or two; probably it is from one, but it does not matter in the least; but we will assert that the way in which he has got the sunset in true tone without a black mill, and preserved the faint lighting up on the sunny side of the mill, is very clever. It may have been obtained by "dodging" the negative, but the "dodging" is not apparent, and we are lost in something, it may be admiration or envy.

Henry E. Davis has three tiny pictures that look like rough sketches in sepia; they are framed close up and rather heavily. "Fretful Spring" pleases us best, but a larger picture, "The Willows," does not, on account of its muddy and flat appearance, impress us at all.

James H. Sinclair has many pleasing little snap-shots on these walls as well as at Pall Mall, but they call for no especial comment.

"Returning to the Fold," by B. Gay Wilkinson, jun.," is a sweet little picture in a method that is supposed to be no longer fashionable, and "still we cannot help liking it;" its theme is pleasing and its composition perfect. But why have we only two frames from Mr. Wilkinson, when we want six? The other one, "Fog on the Wandle," is a subject done to death, and in this particular instance not done too well. Can we not have a few less fog pictures and more sunshine? And while we are in this enquiring turn of mind, may we have not quite so many sunset effects on Lake This and Lough That? and when we are obliged to have them may we have them truer in tone?

This applies to Mr. Wm. Asbury Greene, whose frames are hard by; his "Sunset on the Suir," altogether too black in shadows and hard in high lights, points the moral; No. 276, by the same worker, is much better.

Lewis Cohen's "Winter" is worth noting here, and also "Birds of a Feather," by Eugene Oudin, a name known better in other artistic circles than photographic. The latter is interesting as being a portrait group of the two De Reskes and Lassalle.

We next come to Mr. Frederick Hollyer's admirable series of portraits in the new style, speaking likenesses every one. "Walter Crane is a fine and striking study, so, indeed, is that of Mr. H. E. Davis, whose own work we have previously noted. But to our mind No. 260, "The White Frock," should never have been hung in close proximity to such good work; it is a sickly print, and a sickly pose in the worst style of the professional photographer. Mr. H. Hay Cameron, also a portraitist of the first rank, sends fine pictures, the best of which is that of "Henry Irving as Beckett.

Two pictures, "Setting Sunlight," and "Kisses," by William Cadby, have a very washed-out appearance. Have you seen a child' nose pressed up against the window pane on a wet day? It is just that effect Mr. Cadby has secured in his two little girl figures stretched on a couch with very elaborate accessories, except that one of the girls takes the place of the window pane. The result as a picture is hardly satisfactory; and the same may be said of Mr. Oakes' "An Indian Girl" (No. 279). J. M. C. Groves has three charming little studies on rough paper; we think, however, that "Evening on Lough Swilby," is too dark in tone—in a word, over-printed—and a better impression might be obtained. Two delicate little pictures by Edmnnd L. Woods are Nos. 275 and 281, soft and tender little bits of rushy mere that might very well belong to the "broads" of Norfolk instead of being labelled "California," and the mention of them shall bring our notice to a close. We put the Salon in Othello's position when he demands of his friends, "Speak of me as I am; nothing extenuate, nor let down aught in malice;" and we ask ourselves, "Has the Salon justified its existence?" Candidly, we think it has. There seems to be a general impression that the club, society, ring, or whatever it is that inaugurated it, intended to set up a counter-exhibition to that of the parent society for their own personal gratification; to this it is only necessary to say that there is no external evidence of it, and that well-known men of good repute are ardent supporters of both institutions.

There need be no feeling of hostility, latent or expressed, between the ruling spirits of the Salon and the P.S.G.B.; we have room in London for two exhibitions, even if, by untoward circumstances or mismanagement, they are held simultaneously. The class of work that finds most favour in either institution is not thought too highly of by the other, and under the circumstances a divergence of opinion in the inauguration of a new gallery was inevitable at some time or another. The thanks of the photographic world are due to the promoters of the Salon for having brought together the finest collection of representative work yet held, for bringing to the front new workers at home and men of standing from abroad, without the inducement of medals or awards of any kind. As an exhibition of pictures of feeling and intention as distinct from records of topographical research the Salon speaks for itself, and "fore-words" (for next year) and "after-words" (for this) are altogether unnecessary. We lay down no bigoted opinion upon photography as an art. Joe Pennell, following in the footsteps of P. G. Hamerton, says it is not, and never will be; but men who think seriously about it will tell you that photography has still to work out its own salvation. Let it do so in its own way; it will never be achieved by working year after year in the same grooves, nor will petty jealousies and bickerings help it forward to any extent. Can anyone who has kept his eyes open on photographic work and its progress deny the leaps and bounds it has made in its forward career during the last five years even, desiring to escape the trammels of the "schools," and the narrow limits that scientists would impose upon it?

The end and aim of the Salon is to ensure the recognition of photography as an art; and such exhibitions of artistic work as the one we have under notice can only have that result. There are very few really bad pictures, and very many good—some even have made the reputation of men hitherto unknown in the photographic world as it were in a day—and the inevitable leaven of the commonplace has been brought down by judicious selection to such an infinitesimal degree as to make it almost an unknown quantity.

Cordially then we wish the "Salon" success, and for the coming years "many happy returns of the day."

Shropshire.—The new club rooms were opened on 24th inst. The attendance was very large. The President (Mr. F. W. Williams) was in the chair, and, after the formal opening of the rooms, a varied programme was gone through.

SOUTHPORT SOCIAL PHOTOGRAPHIC CLUB.

THE third annual exhibition, held last week, was the most successful yet held. We were informed that there were upwards of 100 entries for competition, and the gentlemen who kindly gave their services as judges, viz, Mr. Kay, of Lord Street; Mr. Longmaid, of Nevill Street; and Mr. Thorp, of Southbank Road, have awarded the prizes in the various classes as follows:—Lantern transparencies, set of twelve, any subject: First prize, Mr. Dickin; second, Mr. Heaton; certificate, Mr. Neubert. Landscape, set of four, any size: First, Mr. Heaton; second, Dr. Hawksley; third, Miss Dunmore. Figure studies, single figure or group, set of four, any size: First, Miss Dunmore; certificate, Dr. Hawksley. Portrait untouched, set of four, any size: Prize, Miss Wilson; certificate, Miss Dunmore. Enlargement other than portrait: Prize, M. Williams; certificate, Mr. Heaton. Animals, set of four, any size: Special prize, presented by Miss Unsworth, Miss Dunsmore; certificate, Miss Unsworth. Flower studies, set of four, any size: Prize, M. M. P. Brown; certificate, Miss Dunmore: Instantaneous 5 by 4 and under, set of six: Prize, M. Neubert; certificate, Mr. Heaton. Decorative transparency, half-plate and over, set of two: Special prize, presented by the Secretary, Mr. J. R. Cave, Mr. Dickin; certificate, Mr. Heaton. Copies of pictures, other than photographs, set of four, any size: Prize, Miss Wilson; certificate, Miss Dunmore. Architecture, set of four, any size: Special prize presented by the President, Mr. C. F. Depree, Mr. Heaton; certificate, Mr. Dickin. Cloud and Marine, set of four, any size: Prize, Mr. Heaton; certificate, Dr. Hawksley. Competition for ladies only, set of four pictures, any size or subject: Special prize, presented by Mr. Heaton, Miss Wilson; second prize, Miss Wall; certificate, Miss Unsworth. Best pictures (transparencies and enlargements excepted): Special prize, presented by Mr. Cross, Miss Fleming. Best set of six pictures, any size or subject, taken at the outdoor meetings of the club during the summer, 1893: Special prize (presented by the Vice-President, Mr. J. O. Smith), Mrs. Cross; certificate, Miss Dunmore.

The above classes were open to members of the club only. The following were open to all photographers residing in Southport and Birkdale: Lantern transparencies, set of twelve, any subject: First prize, Mr. W. H. Watson; second prize, Mr. J. Atherton; certificate, Rev. C. Hatfield, M.A. Competition for ladies only—set of four pictures, any size or subject: Prize, Miss Fleming; certificate, Miss Kennedy.

"Waste not, Want not."

BY ANON.

OH! I can't take up photography; it's so expensive, you know." How often has one friend or another given us this answer on trying to convert him to indulge in the "black art"? And how often have we been able to help him to economise and save the pence to take care of the pounds? Let this be sufficient apology for this attempt to help others to help themselves.

If we were only to consider what a quantity of different articles get wasted in the course of one's first year in photography, or even later if of an experimental turn of mind, we should be able to recoup something like one-eighth of our expenses by treating of residues. We should add to our inventive faculty by discovering methods of using up things, and we should keep a lot of "rubbish" from littering up our dark-rooms. To deal with this matter we must consider it (1) artistically, (2) pecuniarily, (3) charitably.

I oppose artistically to charitably inasmuch as we, and not poorer people, get the benefits: to pecuniarily, inasmuch as not being original in using up wasters.

Glass is perhaps about the most frequently used material in photography, so perhaps one ought to treat of it first. Plates which are fogged and spoilt otherwise can be easily cleaned of films by soaking in cold water over-night, and plunging in hot suddenly. Such glasses can be used as opalines and they become more attractive if mounted in oak or stained wood. They can be put on plush frames or cardboard covered with imitation leather made of paper. If the print is a shade smaller than the glass, the margin gives room for a variety of artistic ingenuity; it can be Aspinalled or painted—a black edge with gold lines looks neat and quiet, or coloured paper can be brought into contact by gelatine and trimmed off when dry. Satin, too, or scraps of shot silk can be utilised for this.

If we consider cardboard alone, what a variety of forms it appears in, viz., boxes, tubes, waste mounts, wrappers, etc. Quarter-plate boxes can be made into tiny chests of drawers by gumming three or six together and cutting off one end of the top of each; a boot button must be sewn to the inside at one end; the inside becomes the drawer, and the whole can be covered with book cloth or broad riband and neatly fastened at one corner. Tubes such as are used for P.O.P., can become attractive spill-holders by cutting into three and covering with glazed paper and painted scraps. A base can be cut from a spare bit of card and glued on; this may either be left round, square, or diamond shape.

Tins such as are used by the Platinum Company can be similarly treated, though they do well as miniature fern pots if a few holes are bored in the bottom and a wire handle made. Chocolate colour or green are good tints to paint them.

Tiny little easels can be made in a few minutes with a penknife out of odd slips of cardboard. These can be put together with glue, and for variety, sized. If powdered cork or sawdust and red chalk be thrown on them when still wet, a novel and pleasing effect is obtained when finally dry.

To turn to the pecuniarily advantageous or practical side. Our glass can be used for frames or for enamelling upon, or for letter weights, or if enough has been accumulated it can be sold, but not much as a rule is given for it. Bottles, of course, if clean, will always fetch a trifle.

Our cardboard, instead of giving us pretty mounts, now is used for "wrapper" duty by post. Similarly with P.O.P. tubes, which can be cut for small unmounted prints. Vignetting cards are almost too widely used to mention.

Fancy masks of various shapes can be cut from the good black paper which some plate makers use for wrapping up their negatives in. These come in useful in sky printing as masks or in Christmas cards as fancy flower-shaped discs.

Having now considered ourselves thoroughly, we may for a short time think of others. All old prints, all partial failures, *e.g.*, prints toned unevenly, over-printed, or the reverse, etc., are keenly appreciated by the poor in big towns. It is not a bad plan to keep a box for these, and periodically send its contents to the nearest children's hospital, where many "wasters" will wile away many hours of uninteresting and painful monotony. Never tear up a toned print. For those who have time a few such prints can easily be put on an old box lid, when the result will charm and cheer many a less lucky mortal.

The Editor of the AMATEUR PHOTOGRAPHER has, I think, the address of a certain clergyman who begs for such wasted prints. Surely it can't be much trouble to put a few in an envelope now and then and send them off for 1d. by post.

Much more might be said of economy in photography. For instance, the vast subject of residues lies under this head, but the object of this article is to make much out of little, and not much out of much, as in the case of residue collecting.

Splashes of Ink.

BY PENFEATHER.

TAKING into consideration the enormous number of persons who are practising photography, it is gratifying to find how few cases are recorded of poisoning by photographic chemicals. In the wet-plate days, when cyanide of potassium was almost universally used as the fixing agent for negatives, such cases were far from uncommon. Many of these were no doubt suicide, but, on the other hand, there were plenty of instances where individuals, often children, came to untimely end through a propensity for tasting the solutions in the dark-room. Cyanide of potassium is rarely required in modern photography, but there are other chemicals almost equally dangerous to human life in constant use. It is a safe plan, in every household where photography is practised, to treat all photographic chemicals as poisonous. They should always be kept in bottles and distinctly labelled. Labelling is especially necessary with solutions, which are more difficult to distinguish one from another than solids, and it should be the rule that no domestic stores be kept with photographic chemicals, but when any substance is used both for photographic and domestic purposes, there should be a separate stock. It is a convenience to keep the solutions used in development in bottles of different shapes, so that they can be distinguished without having to refer to the labels, a matter sometimes of difficulty in the dim light of the dark-room.

Is the Euston Road photographer, of ancient and ill fame, sharing the fate of most barbarian races, and becoming either extinct or civilised? It would seem so from the fact that, at the present time, there is not a single photographic establishment between King's Cross and Tottenham Court Road. It is but a few years since this thoroughfare was resplendent with show-cases of gaudy elaboration, which somewhat reminded one of booths at a fair, and, indeed, their proprietors were very nearly akin to the showman, and conducted their business on similar lines. No one will regret that the "doorman" is a thing of the past. His dirty and often beery personality, his impudently familiar address, and the offensive persistence of his solicitations are matters we would gladly forget were ever asso-

ciated with photography as a business pursuit. That part of the Euston Road between Tottenham Court Road and Portland Road station still maintains its right to be considered a centre of photographic industry, but there is now little to remind one of the old and discreditable methods of inducing custom. The studios are in the hands of old-established photographers, and are conducted with that decorum which modern ideas demand. The doorman of old apparently could only exist in an atmosphere of ether and alcohol, and when their perfume was dissipated he disappeared; his place is now filled by a polite and sometimes smartly uniformed attendant. The photography here is, perhaps, not of the highest order, but it is inexpensive, and good value is given for the money. Her Grace the Duchess of Lollipop would not choose the Euston Road photographer to immortalise her presentation gown and he is perforce content with the patronage of her humble but not less worthy sisters. The most important point about a portrait is the likeness, whether it be executed by the most fashionable exponent of modern art or by the lowliest peripatetic on the sea beach or elsewhere, and an unpretending sixpenny glass positive or ferrotype may become one's most cherished treasure. Cheap photography may be an evil, looking at the matter both from a commercial and artistic point of view, but there is another way of looking at it. The sentiment of affection for kindred is as strong in the poor as in the rich, and the desire to possess that which recalls the features of those beloved is not confined to the favoured children of fortune. In placing the means of satisfying this desire within the reach of all, the cheap photographer is serving a more useful purpose in life that he is usually given credit for.

It is the fashion nowadays to rail against the encroachment by women on the domains hitherto considered exclusively the property of men, and there is from time to time much wordy warfare with regard to the respective rights of the sexes. Much consternation has been caused recently in one of the most renowned of the metropolitan photographic societies by a threatened invasion of the sacred precincts of its temple by the sex that misogynists accuse of being the cause of all dissension. Of course, the misogynists are in the wrong, as in the nature of things misogynists must be, but it cannot be denied that they score a point, inasmuch as the suggestion that members should be allowed to share with the partners of their joys and sorrows the feasts of reason which that distinguished institution provides, has raised quite a flutter of excitement and opposition, and for a time even the evergreen subjects of depth of focus and measurement of angle of view are considered tame compared with the engrossing controversy of the hour. As far as argument goes, the ladies' party, of course, have the best of it. Their war-cry is a modernized version of an old proverb—"What is sauce for the gander is sauce for the goose." That ladies should wish to participate in the intellectual improvements which, no doubt, they have observed in those privileged to attend the meetings of the society is a most sincere compliment to the society; and could they not in their turn enlighten the members on many subjects which at present can be only mere matters of conjecture? For instance, how valuable would be authoritative opinions on such questions as "the use of domestic utensils in the dark-room," bath-room arrangements for washing prints," "the decorative value of pyro stains," "the use of the pocket-handkerchief as a duster," and other cognates.

Apart from consideration of direct gain, might not their presence be the means of introducing greater refinements in the method of debate? How much better it would be if some of the members, instead of bluntly contradicting each other, would accustom themselves to more polite if less emphatic phraseology. It would be hardly too much to expect that in time, under their gentle influence, the vulgar pipe would give way to the scented cigarette, and the present barbarous custom of consuming beer and whisky would give place to one more in accordance with polite usages. Tea, coffee, and muffins provided at the expense of the society would certainly prove a great attraction. From a domestic point of view how great the advantage too. No longer would the newly-married members be called upon to endure the pangs of long separation from their blushing brides, in order to fulfil their duties of membership, and in later years little Dorothy or Phyllis might be taught to consider an evening at the society a joy quite the equivalent of a visit to the pantomime. But these dreams are destined not to be realised. At the moment of going to press we are informed (I believe that is the correct way to put it, Mr. Editor) that the society has met in solemn conclave, and has rejected their only means of regeneration. Blind mortals! their folly will lead them to ruin.

Lewisham.—At a meeting on 20th ult., Professor C. J. Lambert in the chair, Mr. W. H. Smith, of the Platinotype Company, gave a demonstration of the working of the various papers and fabrics produced by that firm.

Competitions.

	Subject.	Latest Date.	Entry forms to be had from
Am. Phot. Monthly Lantern Slides	Seapieces and River Scenery	Nov. 11	Printed in weekly issues
Am. Phot. Holidays with Camera	Photographs taken during holidays.	Dec. 31	Will be printed in paper
Advertisement Competition	—	Nov. 30	None required
Optimus' 100 Guinea Competition	All Classes	Dec. 31	Perken, Son, and Rayment

Societies' Notes.

The second annual exhibition of the Woolwich Polytechnic Photographic Society will be held on Thursday, Friday, and Saturday, February 8th, 9th, and 10th, 1894. Entry forms and prospectuses ready shortly.

The Leeds Camera Club, which has only been formed a matter of two months, may now be deemed a success, having on its list over sixty members, six new ones being elected last Thursday, and has every prospect of being one of the strongest in its part. On Thursday, November 9th, the president, Dr. Thos. Thresb, Ph.D., L.R.C.P., will give a lecture illustrated by magic-lantern views, describing his recent trip to Flanders, and it is requested that every member, in addition to attending himself, will bring a friend interested in photography.

The Kensington and Bayswater Photographic Society has died a natural death.

The following is a list of the medals which will be offered for the best and second best pictures in the various classes of the Bristol International Photographic Exhibition, and to be awarded by a committee of five judges—four being well-known photographers, and one an eminent painter, three of the judges not being members of the Association. Champion Class.—(1) A gold medal for the picture or series of pictures having already received an award at any previous exhibition, and which, in the opinion of the judges, possesses the highest degree of merit, irrespective of size or subject. (2) One silver and one bronze medal for the best and second best landscape or series of landscapes of $8\frac{1}{2}$ by $6\frac{1}{2}$ or over. (3) One silver and one bronze medal for the best and second best landscape or series of landscapes under $8\frac{1}{2}$ by $6\frac{1}{2}$. (4) One silver and one bronze medal for the best and second best picture or series of pictures of marine subjects of $8\frac{1}{2}$ by $6\frac{1}{2}$ or over. (5) One silver and one bronze medal for the best and second best picture or series of pictures of marine subjects of $8\frac{1}{2}$ by $6\frac{1}{2}$ or under. (6) A silver medal for the best instantaneous picture or series of pictures, other than marine subjects, of $6\frac{1}{2}$ by $4\frac{3}{4}$ and over. (7) A silver medal for the best instantaneous picture or series of pictures, other than marine subjects, less than $6\frac{1}{2}$ by $4\frac{3}{4}$. (8) One silver and one bronze medal for the best and second best interior or series of interiors. (9) One silver medal for the best picture or series of pictures of architectural subjects other than interiors. (10) One silver and one bronze medal for the best and second best portrait or series of portraits of $8\frac{1}{2}$ by $6\frac{1}{2}$ or under, taken direct. (11) One silver and one bronze medal for the best and second best portrait or series of portraits above $8\frac{1}{2}$ by $6\frac{1}{2}$, taken direct. (12) One silver and one bronze medal for the best and second best genre picture. (13) One silver and one bronze medal for the best and second best enlargement of any subject and by any process, provided both the original negative and enlargement be entirely the work of the exhibitor. An unframed mounted print from the original negative to accompany each exhibit. (14) A silver medal for the best transparency or series of transparencies above the size of lantern slides. (15) A silver medal for the best stereoscopic transparency or series of transparencies. (16) One silver and one bronze medal for the best and second best series of twelve lantern slides, by any process other than mechanical. Table frames will be provided. (17) One silver and one bronze medal will be placed at the disposal of the judges for any exhibit of micrographical, astronomical, or other scientific branches of photography. (18) One silver medal for the best picture or series of pictures of botanical subjects. (19) One silver medal for the best picture

or series of pictures of zoological subjects. (20) One silver and one bronze medal for the series of pictures illustrative of local subjects, which may be considered most useful or interesting in connection with the photographic survey of the Bristol district recently undertaken by the Association. The exhibitors to provide a duplicate print in a permanent process to be retained by the Association for the purposes of the survey collection. (21) Two silver and two bronze medals, to be awarded according to the discretion of the judges, for improved apparatus, materials, processes, or for any other meritorious productions.

THE annual report of the Woolwich Photographic Society shows that they have done some good work this last year, and the society is getting on well.

Societies' Meetings.

City of London College.—On 25th ult. Mr. R. E. S. Lawless read an interesting paper on "Lantern Slides," dealing first with the methods of production (contact and reduction), then apparatus, process, and finally development and finishing. The paper was illustrated by specimens of most of the processes described, including slides by the gelatino-chloride printing-out process. The opinion of the meeting was entirely in favour of amidol as *the* developer for lantern-slides. Members' work was shown, including prints of G. E. R. locomotives, and transparencies developed with metol and pyro and soda, those by the latter being entirely free from stain.

Derby.—The first meeting of the winter session was held on 17th ult., Mr. Keene presiding. The subject for the evening was "Photography and its Application to the Detection of Crime"—a paper by Dr. Paul Jeserich, and which was illustrated with about forty lantern slides. The paper was read by Mr. A. H. Bennett, while Mr. C. B. Keene officiated at the lantern.

Hackney.—24th ult., Mr. E. Puttock in the chair. Members' work was shown by Messrs. Cross, Guest, and Norris. Some excellent snap-shots of football players were shown by Mr. Gosling. Mr. Guest showed two bromide prints (enlargements), one at twenty minutes' exposure with gas-light, and the other with half an hour. The former was developed with amidol, the latter with hydroquinone. The one developed with amidol was stained, and the reason asked. Several members stated it was not due to the developer, but contamination with dirty dishes or hypo. Mr. Dean showed an over-printed view on printing-out paper fixed direct with hypo without toning, and asked the cause of black spots upon the face of it? Mr. Beckett said that the print must have been imperfectly washed, and the citric acid left in paper in combination with hypo produced sulphur toning.

Leeds (Camera Club).—On 26th ult. Mr. A. Homburg gave a lecture on Flash-light Photography, and in a most interesting and amusing discourse gave his experiences, his successes, and his failures from his first commencement up to the present time, and in plainly worded terms gave the flash-light aspirant some valuable hints how to go on and what to avoid as a means to success. Practical illustrations of methods together with a collection of prints and the negatives result of his endeavours were shown by Mr. Homburg and received with interest.

Liverpool (A. F. A.).—The monthly meeting was held on 26th ult., Mr. A. J. Cleaver presiding. Messrs. F. A. Schierwater and Benjamin Cookson were appointed auditors for the year. Special mention was made by the President of the success achieved by the association in the recent National Lantern Slide Competition, viz., Messrs. Fred Anyon (Silver Medal), Joseph Earp (Bronze Medal), G. A. Carruthers, Anthony Dod, Harry Holt, and T. B. Sutton. Mr. Adolph W. Beer gave a lecture entitled "By River and Hill: Some Bye-ways among the Ardennes and in Rhenish Prussia," illustrated by 130 lantern slides made from negatives taken by the lecturer and Mr. J. H. Day. The slides were of high quality and artistic merit, and were very graphically described by the lecturer.

Liverpool (Camera Club).—The usual meeting was held on 25th ult., the President, Mr. J. Hawkins, in the chair. The programme for the evening was an exhibition of members' lantern-slides, over 150 being passed through the lantern, which was very much enjoyed by the members. Messrs. Brown and Tansby officiated at the lantern.

Loughborough.—Oct. 24th, a full meeting of members, under the presidency of Mr. Councillor Burder, assembled in the newly-opened rooms of the society to hear Mr. S. H. Fry lecture and demonstrate on the Paget Prize printing-out processes on paper and glass. The lecturer, in a lucid and interesting way, thoroughly explained the best formulæ for getting the most satisfactory results both in print and on glass, pointing out especially where difficulties were likely to attack the amateur. In his demonstrations he was particularly happy and successful, hopes being expressed that he might be able to pay another visit at a future time. Several new members joined, ending a really pleasant and instructive evening.

Leytonstone (Camera Club).—On the 18th ult., the President, Dr. W. Pickett Turner, in the chair, the first demonstration in the new hall and studio took place. M. E. A. Leblanc demonstrated the uses of Dr. Andresen's rodinal and glycin, also metol, amidol, eikonogen, fixing and tone-fixing cartridges. A large number of negatives and prints which were passed round amply testified the capabilities of Dr. Andresen's specialities, one of the most remarkable and useful being the fixing salt, a ½ lb. solid bar dropped into 40 oz. of water being dissolved in about 30 sec.

SOCIETIES' FIXTURES.

Nov. 2.—ASTON—"Some 'Why's' of Development Answered," F. W. Pilditch.
" 2.—LIVERPOOL—"Lantern-Slide Making," Mr. G. A. Carruthers. "Lantern-Slide Reduction by Daylight," Mr. H. Holt.
" 2.—HULL—"Photographic Processes for Beginners," Rev. G. A. Coleman.
" 2.—BRADFORD—"Lecture on Iceland," by Paul Lange.
" 2.—ASHTON-UNDER-LYNE—Christmas Mounts on View.
" 2.—UTTOXETER—Exhibition of Lantern Slides.
" 3.—LEEDS Y. M. C. A.—"Illustrated Lecture on Photographic Dodges," Mr. C. C. Vevers.
" 3.—HOLBORN—Demonstration, by the Autotype Company.
" 4.—LEYTONSTONE CAMERA CLUB—Open Social Evening.
" 6.—ACCRINGTON—Annual General Meeting.
" 6.—DARLINGTON—Annual General Meeting.
" 6.—WOOLWICH POLYTECHNIC—"Negative Making," Mr. A. Pringle.
" 6.—RICHMOND CAMERA CLUB—Lantern Evening. AMATEUR PHOTOGRAPHER Prize Slides.
" 6.—PUTNEY—Mr. S. Fry on "Unconventional Printing Methods."
" 7.—BRIXTON AND CLAPHAM—"Lantern Slides by Reduction," Mr. Butler.
" 7.—HACKNEY—Open Night.
" 7.—NEWCASTLE—Monthly Meeting. "Discussion on Printing Processes," Mr. J. P. Gibson.
" 7.—ASHTON-UNDER-LYNE—Lantern Exhibition.
" 8.—WIDNES—"Flashlight Photography," W. Priestnall.
" 8.—PHOTOGRAPHIC CLUB—Members' Open Night.
" 8.—LEYTONSTONE CAMERA CLUB—Demonstration, "Wheatstone's Stereoscope, and How to Make Pictures for it," Mr. A. P. Wire.
" 9.—TOOTING CAMERA CLUB—"The Sandell Plate," Mr. Fry.
" 9.—LOUGHBOROUGH—"Stereoscopic Work, Paper by H. Wood.
" 9.—LEEDS—Lantern Lecture, "Old and New Flanders," Dr. Thresh.
" 9.—HULL—AMATEUR PHOTOGRAPHER Prize Slides.
" 10.—LEWISHAM CAMERA CLUB—"Common Defects in Negatives: their Cause and Cure."
" 10.—SUTTON COLDFIELD—Our Club Excursions, with Lantern Slides.
" 10.—HOLBORN—Social Evening.
" 11.—LEYTONSTONE CAMERA CLUB—Open Social Evening.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6170. **Developer.**—Will any reader of your paper give me a developer for Nikko paper (Eastman's) with hydroquinone giving strong velvet tones?—E. M.

6171. **French Polish.**—Can anyone inform me how to make best French polish, such as is used for cameras? And also what is generally used as a pad to rub the polish on?—ENQUIRER.

ANSWERS.

6157. **Print Washer.**—The following is a simple but useful way to wash prints, namely, make frames of wire covered with coarse canvas, place one over the other, and then place in the tank for washing.—D. H. W. PREEDY.

QUERIES UNANSWERED

Aug. 25.—No. 6155.
Sept. 1.—Nos. 6158, 6159, 6160.
" 22.—No. 6161.
" 29.—No. 6162.
Oct. 6.—No. 6163.
" 13.—No. 6164.
" 27.—Nos. 6168, 6169.

EDITORIAL.

ÆSCURINE.—Will you forgive us if we are very cruel, please. (1) Over-printed. (2) Over-printed, and prints want trimming down. (3) Under-exposed; negative too hard. (4) Is this meant for an illustration of something we have heard about a leopard and his spots? You were most unfortunate; sunshine passing through the leaves of a tree always forms round patches, which comes out very conspicuously in a print. (5) Over-exposed, and has a flare spot in the centre. (6) Very much over-printed. (7) Never take portraits in sunshine if you can help it; negative hard. (8) The flare spot spoils it, and more sunshine. (9) Over-exposed. (10) Print over-exposed; cut down your exposure, dilute your developer with 2 parts of water, and add some bromide of potash to it. (11) Ditto. (12) Over-exposed, and negative shows flare spot. We have rarely seen such a poor lot of work; please let us know what apparatus you are using, what plates, developer, etc.; you want some help badly.

E. Z. M.—(1) Flat and weak; developer too hot, or negative too weak. Try printing through green glass or intensifying the negative; print in clouds and sun down the little white patch. (2) Too black and heavy, wants clouds. (3) Wants an inch off foreground, more sky, with some good clouds; print flat and weak. (4) Print too flat and weak; wants clouds to break the line of hills. (5) You have just missed a picture here; had you got further off and taken in the top of the trees, you would have a lovely bit. (6) Good; though the distance should be a little more distinct. (7) Trees too black; the left-hand branches utterly spoil it, and the fog on the right spoils it. (8)

Under-exposed ; mnch over-printed. 9) Exquisite. Print this on rough paper like mezzotype, rather deep, and tone deeply either with platinum or gold. (10) Over-exposed, flat, and not worth wasting a plate on. (11) Taken too near ; had you gone further back you would have got a better result ; water too white. (12) Trees too black ; mountains too distinct, water too white. Treat the negative with bromide and bichromate of potash and nitric ; when bleached wash thoroughly and redevelop with ferrous oxalate till the trees and distance are developed, and then immediately fix. (13) A little too flat ; print through green glass or intensify negative. (14) Ditto. (15) Good. Could you call hy appointment, and bring some negatives with you, and we could then tell you more than hy writing in these columns.

H. G. FISK has a camera which will extend to 17½ in. which he is desirous of using for copying purposee but with his present lens this extension ie not long enough. The most suitable lens for this purpose would be a lens of not longer focus than 8 in. ; this would allow copying line or other objecte the same size, as the greatest extension required would bs 16 in. A lens of the portable symmetrical or wide-angle type would be the best. A reference to the various lens makers' catalogues will enable him to choose one. What are the best plates for this purnose? Any very slow plate such as Mawson's or England's photo-mechanical, which are made specially for this work,or,failing these, transparency plates such as Edwards', Paget slow lantern emulsion. Ilford slow lantern. Barnet slow lantern, Cadett'e ditto, etc., etc. The developers most suitable are—

Metabisulphite of potash	2	oz.
Bromide of potash	½	,,
Water	8	,,

Dissolve, and add—

Pyro	1	oz.

For the developer take—

(1) Above etock solution	2	oz.
Water	18	,,

and (2) saturated solution of washing soda. Mix in the proportion of 8 of No. 1, to 1 of No. 2. Or you can use hydroquinone if you like, but we prefer pyro—

No. 1.

Hydroquinone	80 gr.
Metabisulphite of potash	120 ,,
Bromide of potash	5 ,,
Water	20 oz.

No. 2.

Caustic potash	200 gr.
Water	20 oz.

Mix in equal parts. The first essential in copyiog line work is absolutely clear glass ; density is a secondary consideration in development, though if the exposure is correct both may be readily obtained.

T. HARPER has been using a particular brand of plate and developer for three tyeare, and now asks whether he could successfully use a quicker plate with a cap. As an exposure of ahont a quarter of a second can be given with the cap, we should say that there would be no difficulty in working quick plates, and for brande choice may be made from any of the firms advertising in our pages. (2) A P.O.P. print squeegeed to an old negative glass is sent up which will not etrip. Thie is probably due to the glass not being properly cleaned. The glass should be well cleaned and then rubbed with a little waxing solution, or warmed, and the fag end of a wax candle rubbed on it, and then the wax polished off nearly. (3) A fogged negative is sent; what is the cause and remedy? Over-exposure and too etrong a developer. Increase the bromide and reduce the ammonia in the developer. To remove existing fog, reduce the negative after fixing with Howard Farmer's ferridcyanide and hypo reducer, wash thoroughly and then intensify. (4) A fading negative covered with little silvery spots is sent; what is the cauee and remedy for both? Fading in negatives is generally cansed by insufficient fixing and washing. The remedy is, leave the plates longer in the fixing bath and wash better. The silvery spots are stains due to absorption of free silver from the printing paper due to dampness. Remedy, varnish the negativee. Faded negatives should be well washed, bleached with mercury, and blackened with a elightly acid solution of eulphantimonite of soda (Schlippe's salt).

MAGISTER aske for a good hach for toning matt silver printe with potassium for chloro-platinite of potassium for warm and black tones. The following will answer for warm tones—

Chloroplatinite of potassinm	1 gr.
Solntion of potassium oxalate (1 : 4)..	1 oz.
Nitric acid	2 drops
Distilled water	3 oz.

For black tones reduce the above quantity of water to 1 oz., and tone longer. For platinum toning there are three important points to note, (*a*) the print must have no free silver nitrate in it, therefore wash first in salt and water ; (*b*) the toning bath must be acid ; (*c*) the print must be free from eoluble platinum salts before fixing.

D. S. O.—(1) The lens you name is euperior by far. (2) It is perfectly rectilinear. (3) The addition of water to the developer is suggested merely to weaken the developer and thue allow it a chance to compensate for over and under exposure, unless accompanied by alterations of the proportions of other constituents; however, it is not of much valne.

A. R. A. wants to copy a c.-d.-v. on a quarter-plate, and has only a 10 in. lens and half-plate camera, and he cannot get the picture sharp ; he has also a 5½ in. lens. Fit the 5½ in. lens on to half-plate camera, place the lens 11 in. from the c -d.-v., and rack camera out to 11 in., and you will then get picture same size. What length of exposure with magnesium ribbon with an Ilford rapid plate and *f*/16 will he required? Ahout 12 in. burnt on each side of the print.

ALICE sends us three prints of a foxy-red colour, which have heen toned in a platinum bath, and wants to know why they are this colour. No information is given as to composition of bath. Was platinum bichloride or chloro-platinite of potash used? The first is useless for toning. See answer to "Magister" this week as to formula and method of working. When toning either with gold or platinum the change of tone must be judged hy looking throngh the prints, and the tone always goes back, that is, gets more brown in the fixing bath, so this has to be allowed for. For toning P.O.P. to a sepia tone, the above suggested bath may be used and the prints toned till on looking throngh there is still some brown in the deep shadows. A fresh bath need not be made np for each print, but after five or six ; this must be decided by the length of toning. Shall alwaye be glad to see prints.

FRED TERRY asks how to mount P.O.P. prints on cards after glazing and backing, as he finds they will not adhere neatly to the mount. Rather too stout a paper ie used for backing ; it is really card Use somewhat thinner paper, and then, whilst the print is still damp on the glass, give it a good thick coating of etarch paste or other mountant. When dry, strip and repaste ths back. We are unable to see any etains on the print you send. There is double toning, that is, the high lights are blue and the shadows brown, and one or two little rusty spots which look like metallic particles. The plate was under-exposed and the lighting is too much from the top. A softer negative would have given far better resulte.

AN A. P. interested in advertising is not quite clear as to conditions of the competition. (1) All the prints will become the property of donors, but that does not give the right to nse them for advertising purposes without permission and presnmably without paying for them.

J. E.—No. 1, very much nnder-printed ; ehould have had at least four times as long. (2) Over-exposed ; reduce exposure to about two-thirds of what you gave. Utterly unable to criticise negative from ench printe.

RHENSTEIN.—Your letter was accidentally overlooked. In printing gelatino-chloride paper there are several things to take into consideration—first the toning hath that ie to be used, as some baths reduce more than others ; secondly, the character of the view, for a brilliant sunshiny scene should have some whites in it, whereas it is permissible in evening effects to have little or no whites at all It must be remembered that in nature we do get things as white as white paper, bnt we never get blacks like the blacks of platinotype, bromide, or very deeply-printed chloride paper. Our rule for general work is print till the highest lights have a faint tinge over them. The best thing for you to do will be to cut a sheet of paper into four strips, place all under a negative, and print out for a certain time, then remove one strip, print longer, then remove the second strip, and so on. Cut these strips in half, tone one set of halves, fix and wash, and then compare to see which depth of printing gives you the best results ; or if you like to take a typical negative and take four or six prints from it, and cut these in half aud tone and fix, and eend both halves up to us, we will tell you which we think the best.

P. H. DENNIS encloses a letter with lantern slides for our competition. This should not be dcne ; it is the very best way of having a letter overlooked. He complaine of greenish-brown tones instead of black. Under-exposure is the cause of this. Increase the exposnre and rich blacks will be obtained.

J. N. D. asks how to distingnish, from its action on the prints, a want of sulphocyanide and an over quantity of ditto. Unfortunately, we know of no means of telling when there is insufficient sulphocyanide, but if the bath was originally made up with one of gold to ten of sulpho-ealt you need he in no fear of exhausting it, as the eilver of the image replaces the gold when combined with the sulphocyanide. Too mnch sulphocyanide soon makes itself felt by softening the gelatine; the greatest etrength should not exceed 32 to 1 of gold.

R. R. MOORE has two lenses—a 5 in. and an 8 in. focus, both R.R., and both alike and same qnality. He aske—Suppose 2 sec. to be the correct expoeure for the 8 in. with *f*/32, what would be the proper exposure for the other lens with the same etop? The rule is that the exposure with the same ratio value stops is always the same whether the lens be of 8 in. or 80 in. focus. If this correspondent means, however, that he has used the *f*/32 stop of the 8 in. lens in the 5 in., he would have to reckon out its new ratio value thus : The diameter of stop *f*/32 for 8 in. lens = ¼ in. ; 5 ÷ ¼ = *f*/20, and the exposures will be as $32^2 : 20^2$ or 1,024 : 400.

F. A. W. W.—There is no book on instantaneous photography. If you like to send the plates up we will see what we can do for you as to developing them, but try any of the rapid plates advertised in our pages—Ilford, Rocket, Paget, Cadett, Imperial, etc.

L. H. LLEWELLYN.—(1) The only faults with your portraits are, first, a little too strong a top light. This could be remedied hy rigging up a fine linen screen on a tall bamboo stand, which could be raised or lowered over the sitter's head. For the same reason the shadows under the eyebrows, chin, and nose are too dark. White paper, newspapers, etc., placed on the ground would reflect light up and help this. If you do not understand about screen, send on stamped addressed envelope and we will send sketch. (2) You give no data as to plates or developer used. Use the most rapid plate you can get, use diffused daylight, and give long exposures and develop with metol, or else reduce your pyro very much so as to get softness. It is merely a question of exposure.

ANXIOUS.—See reply to question 2 of L. H. Llewellyn as to details. Use your half-plate camera if it will rack out far enough. There must he just double the focus between lens and print and lens and plate to copy the same size.

J. M. aske the meaning of the term "a hard negative." A hard negative is one which is slightly-under-exposed or one developed in such a manner that the high lights are denser out of all proportion to the shadows, consequently, when printing, the high lights are without detail and the shadowe black and heavy. The print is then said to be hard and chalky. We have prints and lantern-slides to lend, and the fee is 1s., the borrower paying carriage both ways.

B. N. H.—(1) Let us know whether you want dark slides, plates, films, or magazine, and the outside price. (2) Duty is not charged on photographic apparatus for personal use at the Cape. (3) Ilford plates can be had from Pocock, 7, Short Market Street ; Haynes, Mathew, and Co., Adderley Street ; and B. G. Lennon and Co , Cape Town ; also from Lennon and Co., at Port Elizaheth, East London, and Johannesburg. Lennon and Co. also stock Cadett and Neall's plates. (4) Plates should be packed in air-tight boxes, but use your apparatus on the way out. (5) They are good films, hut we can hardly say they are the best.

CAMBRIAM.—(1 and 2) Photographs for advertisement competition are to he merely mounted, and may bear any title or suggestion as to euitability for a particular advertisement.

T. S. SHAW.—(1) A pair of Pamphengos lanterns could be used for enlarging hy throwing the light on to the negative, which should be placed in a frame. If you have a dark-room and can cut a hole in the door or wall just large enough to take the negative, the lanterns can be placed outside and the negative just covered by the two circles of light. Then inside you can place your camera close to the negative, and the lens will project the image, which may be received on a eheet of cardboard or ground glass in a printing frame, which may afterwards be replaced by the eensitive paper. This is the simplest way. If not clear, write again.

ENQUIRER asks our opinion as to photography as a profession. This reminds us forcibly of an old tale about the Italian organ-grinder who would not speak to the cat's-meat man, because the latter was a low tradesman, whilst he was a professional. However, joking apart, photography as a business will pay undoubtedly in the future. Those who have a first-class education in it, who have all the technical part at their fingers' ende which must be hacked up hy high artistic skill and a good amonnt of capital, will make money. Professionals should be able to introduce novelties, work every process, and not stick strictly to portraiture, but make good local views, good landscapes, studies of animals, copying picturee, and be able to do all their own work or know when it is done propsrly for them. If our correspondent can do all this, then we say go in and prosper ; but do not think this is to be picked up in a day or a year. It means a lot of hard work and time. The professional of the future will not be the mere plate spoiler he is too often now, but something higher and better. We do not look on the black side of the question, but undoubtedly so many amateurs must educate public opinion, even if slowly, and the third-rate professional has to suffer.

VAUPRESA.—(1) There would be no danger of an explosion. Spread the powder out into a line, and don't put either face or hand too near, (2) Use *f*/11. (3) A screen of oiled tissue paper would be advisable.

T. RERELY asks (1) whether bromide prints are permanent when developed with hydroquinone and fixed and washed for 2½ to 3 hours. Yes, as permanent as any print can be which is formed by eilver. (2) Halation round a church window may be reduced by rehalogenising the image with bromide, bichromate of potash, and nitric acid, and washing, and redeveloping with ferrous oxalate till the details in the shadows are all out, and then fixing. (3) Your press is a rolling press, not a burnisher, but you can possibly use it as a burnisher by heating the plate with a gas or oil lamp, and smearing the prints with an alcoholic solution of Castile soap.

R. J. BRUNSHILL.—(1) There are several good commereial mountants which are specially made for P.O.P. prints—Fallowfield'e, Adams, Butcher's, Marion's, Honghton's, Percy Lund's. (2) If P.O.P. prints have been treated with an alnm bath and dried, you cannot obtain such a fine polish on them by squeegeeing ; this should be done when the prints come from the washing water. (3) An impossibility ; A is as good as B, and B as good as C, therefore A is as good as C. (4) C B A D.

S. C.—Your answer was accidentally held over. Place the lights by side of the camera.

J. J. CREE.—Many thanks for information.

KROC put a plate in contact with a lantern slide and got a positive, and asks, should it not have been a negative? It should certainly, but as too long an exposure was given, the whole reversed, and a positive was the result.

M. C. SILLARS.—Considerable delay has arisen through our having to have them printed. As soon as ready, it shall be sent on.

THOS. HULL.—Lindsay Hemery, of Peckham, or Wilfred Emery, of Baker Street. See advertisement pages.

J. C.—Many thanks for the prints. (1) You can filter the bath without any harm. (2) A gelatine mountant is the best, and we should advise you to go to Baird or Hinde, who probably have ons ready made, it is a big nuisance to make one oneself. (3) To back a plate, mix one part of caramel, one part sienna, one part of gum arabic, spread on the back with a stiff brush or roller squeegee, and lay it, whilst wet, on a sheet of red paper cut to size. Use rapid plates for interior work, and give one hour's exposure or, if you can, two. It seems almost impossible, within reason, to over-expose interiors. (1) Water too white, wants clouds, and has a little too much foreground. (2) We think you might have got further back and got a better stand-point. (3) Why spoil it by vignetting? (4) The straight line across the centre is very trying. We should have brought the fall nearer the bottom and got more sky, or gone further back and taken more in, looking up the valley more. (5) Good technically. (6) Ditto. (7) A chance for a picture here. Distance too distinct and clear; paint over it on back of negative, so as to make it lighter. (8) Good.

W. MALLINSON points out that we have given two different formulæ and two different methods of using the combined bath. The first formula was given in parts, the second in grains, and the proportion is practically the same, the difference being really in the amount of water, and this is only 13 drops to the ounce. The quantity of hypo was written by us the same, but the printers made a mistake, which we did not notice. With regard to the difference of working the first method was that of Valenta, of Vienna, who suggested the bath. The second method is ours, and one that we prefer. Staining by washing before toning is totally avoided by the use of salt, and we should prefer washing before toning, so as to eliminate the acid in the paper, which may give rise to sulphur toning due to decomposition of the hypo. The use of the salt bath before toning certainly retards toning slightly. This we do not mind. We might, however, add that we never use a combined bath. He also asks is it advisable to add bromide 1 gr. per ounce of metol developer for negative work, and then to use glacial acetic acid 10 per cent. for restraining? This is the way we use it, and consider the most satisfactory.

ROBIN.—Thank you for your letter. Both prints have been printed in too bright a light, or else the negative is weak. It is a good photograph of a house, but we think he might well try for more artistic things, and now that the leaves are off the trees there might be chances to make some nice little bits in the country. Of the two prints we prefer No. 2.

GEO. W. JONES asks at what distance from the plate a 5½ in. R R. will give fixed focus from 10 ft. to infinity. The rule is, multiply the diameter of aperture by focus, divide by the greatest allowable error, and add the focus and divide by 2. Assuming that the lens works at *f*/8, we get 5½ ÷ 8, the diameter. Assuming 1-100th of an inch the greatest allowable error we get

$[(1 \times 5\tfrac{1}{2}) \div \tfrac{1}{100}] + 5\tfrac{1}{2} \div 2 = 16$ ft. practically.

If we take *f*/11 as the aperture, we get 11 ft. 9 in., so that we must take an aperture slightly smaller than *f*/12. If *f*/8 be used, and an object 10 ft. off be focussed sharply, the distance must be out of focus.

E. FARMER.—Your prints were received too late for last week's issue. (1) Either your negative is too thin and wants intensifying, or else you have been printing in the sun, and we should paint out the boughs at the top left corner. (2) Over-printed and over-toned, and the whole looks muddled up. There is evidently material for a fine picture here, but you have missed it. (3) Over-printed and over-toned. (4) Interesting to you, possibly, because of the houses, but otherwise not worth taking. (5) A good thing spoilt in the printing. (6) An uninteresting bit of road. (7) Over-printed, wants clouds, and the fuzzy bit in foreground does not add to it. (8) An inch too much foreground, and there is a band of fog across the right side of print, probably due to the hinge of dark-slide. (9) An utterly uninteresting foreground and an ugly bridge; almost an impossibility to make a picture of it. The fog is on the left in this picture. (10) An inch too much foreground, over-toned. (11) There are better views than this to be got of the Miners' Bridge, looking up the valley more. (12) Very fair. Nearly every one of your prints are faulty in printing. In every case nearly you are printing in too strong a light, or else your negatives are too thin.

STUDIO is going to build a studio, and asks whether a glass roof would be sufficient, or whether glass side and roof would be better? The latter is far preferable. Where can an archimedean screw and rack-work for a studio stand be obtained? This could probably be obtained from Parkinson, of Leeds.

A. ILFORD asks the best speed of plates for photographing lightning, and the best paper to print such things on. Medium rapidity plates would be quite sensitive enough, and gelatino-chlorids paper the best.

A. D. has an intensified negative, one-half of which is stained a deep yellow colour. This is probably due to non-removal of the hypo. We are afraid it will be a difficult job to remove the stain, but see note in "The Mouth," p. 292, this issue. He has broken a valuable negative after having made a print-out opal, and wants to know whether he can copy it. The simplest way of reproducing it would be to place the opal in an ordinary printing frame and place on the film side a slow dry-plate and expose to gaslight for a few seconds, and then develop with the ordinary negative developer.

C. H. PITTS-TUCKER would like to know whether an amateur should be disqualified in a competition if he prints clouds in pictures taken by himself from cloud negatives not taken by himself. If the conditions of competition state that the whole of the work is to be the work of competitor, it is not allowable to print in from bought, borrowed, or stolen cloud negatives. Would false clouds inserted into a picture and the natural sky blocked out be called a printing dodge, like vignetting? We should say so, most decidedly.

C. W. POORE.—You were disqualified, as we required not less than six slides. Shall we return your slides?

OLE BILL.—Probably in about a fortnight's time the medal will be ready. Can prints be easily stripped from matt celluloid? Yes, much easier than from glass.

S. RUNICLES.—We have made no comparative tests, but if you like we will send you out free a sample packet of quarter-plates which you can try side by side. A great deal depends upon the individual working and method of working. We will write you by post also.

E. P. VULLIAMY wants to know all about the Parvin telephoto. lens. This is practically an uncorrected meniscus negative lens placed behind a rectilinear. We will print next week a full description of it.

C. S. C. has arranged bromide and chloride prints on American cloth and wishes to varnish them, and asks whether that would be advisable, and what varnish to use. A varnish would probably preserve the prints longer, but it would have to be carefully applied, or we fancy the surface of the American cloth would be dissolved by the varnish. Crystal varnish would be the best, and this may be obtained from almost any photographic dealer.

THORNHILL wants the moon—we beg pardon, a photograph of it. He has a reflecting telescope and various photographic objectives, and wants to know the rule for the adjustment of the camera, lens, and screen with regard to the focus of the telescope. Should a photo lens and not an eye-piece be used, and would a long or short focus lens be best. What would be the exposure, and, should the light be too strong, should the lens or speculum be stopped down? Unfortunately we have often longed for the moon, and good instruments to get it or its image. But we have had no practical experience of lunar photography. We would suggest our correspondent writing to Mr. Isaac Roberts, the Royal Astronomical Society, Burlington House, W., who would probably give all information. We think a 6 in. speculum is too small, but will look up the subject for next week.

GEO. P. MOON sends us up a yellow print, and asks whether it is the proper tone for a chloride print toned in a sulphocyanide bath; if not, what is? With the sulphocyanide bath it is possible to obtain almost every tone, but more readily the purples. We should say that the print was not sufficiently toned; to keep the prints in the toning bath till on looking through them they have attained nearly the colour desired; when fixed and dried they are slightly colder than before.

STEREO wants the address of a photographic society within a mile or two of the Albert Hall. So far as we know there is no society nearer than the West London, which meets at Chiswick.

H. COLES has a Guinea hand-camera, and wishes to photograph some ward interior and cases in hospitals, where it is impossible to use a tripod, and asks which are the best plates and the best developer. We are afraid to suggest anything almost, as snap-shot work in a hospital ward does not sound promising as to results, and either the plates, the developer, or our advice will be blamed. For such work the very quickest plates that can be bought should be used, a big aperture lens, and time exposures. We should use Amidol or Metol, to prevent harshness. We shall be pleased to see prints, and we can recommend the instrument you name.

"A. P." READER.—(1) Negative wants intensifying, or else printed in too strong a light; slightly over-toned. (2) Is this on pink paper, or are the whites tinged by over-toning? Too much foreground, and too black on the right. (3) Another weak negative—we should say there is absolutely no white in the print. (4) A very ugly tone; over toned. (5) Ditto. (6) Over-printed and over-toned. (7) Slightly under-exposed and wants clouds. (8) Camera not straight; the boughs of the trees on right absolutely unsupported, and should have been painted out. (9) Over-printed. Not one of your prints has got a pure white in it.

D. J. G.—(1) Taken the wrong way of plate; over-printed, and lights too scattered. (2) Far too much foreground, and not enough sky; slightly over-printed. (3) Negative too harsh—we should say under-exposed. (4) Taken the wrong way of plate. Had you taken it the other way you would have been able to get in the clerestory, which is interesting, in that the style of architecture is quite different to the triforium. Almost the most interesting bit of the cathedral is behind the altar, the entrance to the presbytery.

RIATSALA.—A, 1. B, 4. C: A good Metol developer is—

Metol	5 gr.
Sodium sulphite	50 „
Bromide of potash	1 „
Carbonate of potash	10 gr.
Water	1 oz.

Mix in equal proportions. For snapshot work increase the potash to 20 gr. per oz. of No. 2.

ENQUIRER.—French polish is nothing but a solution of orange shellac in methylated spirit, coloured if necessary with dragon's blood. We cannot lay our hands on formula. We insert as a query.

A. J.—Adams has exposed a plate on a subject which has come out very under-exposed so that if fixed, the shadows would be bare glass. The negative has been well washed, dried, and kept in the dark, and he wants to know what to do with it, how to make it better. He asks whether it would do to convert the image into chloride of silver, expose to light, and then redevelop. If this was attempted, probably the bromide of silver would be also blackened. It might be possible to convert the negative into a positive by treating the plate with bichromate of potash and nitric acid, so as to dissolve the image, and then expose the plate to light, and develop, so that it would be possible from this to obtain a negative. We should be inclined to try a few experiments and see what could be done by various methods; treating the unfixed plate with mercuric chloride, and then washing and developing might also be tried, but we are doubtful as to whether the mercury would not also be deposited on the unexposed and undeveloped bromide of silver. Anent our remarks on "pitting" Mr. Adams asks us whether we have noticed pits in pairs. He has had this fault, and traced this to the double proboscis of the common house fly which feed on the soft gelatine. He has now encouraged spiders in his dark-room and thus wages war against the flies. Here is a good wrinkle for our readers, especially the ladies, who are avowedly fond of spiders.

W. NORTH.—Thank you for your letter. Will you send us the formula or maker's name of the stuff you use to remove the stains?

NIL DESPERANDUM has a half-plate camera, two lenses, a 9 in and 5½ in., and has been lent an enlarging camera, and wants to make 12 by 10 enlargements, but cannot manage it. As a rule the Multum in Parvo enlarging camera has a lens in the middle which should be used, but to enlarge from half-plate to 13 by 9 is enlarging twice, and using the five shorter focus lens, there must be $2+1\times5\frac{1}{2}=17\frac{1}{2}$ in. between the lens and sensitive paper, and half this distance between the negative and lens. With the 9 in. lens the distance would be $2+1\times9=27$ between lens and papsr, and 13½ in. between lens and negative. To find these distances divide the longest side of the paper by the longest side of the negative, add one to this, and multiply by the focus of lens to find the distance between lens and paper, and divide this distance by the number of times of enlargement to get the distance between lens and negative. (1) is under-printed. There is not enough sky, and it wants about half-inch off foreground. (2) Good, although it sadly wants clouds. (3) Under printed, it wants clouds, and had you gone a little further off and broken up the foreground by the anchor, which you could very easily have done, you would have got a very much better thing. With regard to "Holidays with the Camera," we shall print the entry form in a December issue, and this only need be used. You might compete.

F. BAKER finds that in toning chloride paper, he gets double tones. The best thing is over-print rather, and then tone. Yellow whites are due to an acid fixing bath. We think you will find that placing the prints direct into salt and water after toning, and then into a fixing-bath composed of

Hypo	4 oz.
Sodium sulphite	2 „
Sodium carbonate	¼ „
Water	20 „

(3) Except for the ugly chair or frame behind the child, this is a charming little study. We should destroy the background entirely, so as to make this print out on a perfectly black ground. (4) Just a little, half an inch off foreground, and printing in clouds, and a more vigorous print, and you will have a charming little study.

G. BRODIE.—The 1892 Prize Slides are out on loan, but you shall have them when they come back.

The AMATEUR PHOTOGRAPHER

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"**Holidays with the Camera**" **Competition.** — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

In our note *re* the Convention accounts last week, we unwittingly did an injustice, for we find that the funds are in a better state than we anticipated, the balance being actually £47. This is decidedly healthier, and we sincerely hope the improvement will be sustained.

Any of our past prize winners who may not have received either their medals or certificates are requested to drop us a post-card. We have a lot now waiting for delivery.

The report of the examinations department of the City and Guilds of London Institute has just been issued, and we find that there is a considerable all-round improvement. There were 119 candidates in photography, with a percentage of 26·8 of failures. Comparing the number with last year we find that there is an increase of 48 students this year, there being only 71 last year. There is one curious feature, and that is that the number of students last November was returned as 331, of whom only 119 went up for examination.

Amongst the prize winners we find that Mr. F. W. Pilditch, of Birmingham, wins a bronze medal; Thos. Brown, of Leicester, a bronze medal; H. W. V. Wilson, of Liverpool, a bronze medal; and P. G. Phelps, of London, a silver medal, the last three also winning money prizes as well.

The value of these examinations is undoubtedly in the preliminary training necessary first, and we should like to see more students still take advantage of the technical instruction, for, whether professional or amateur photographers, a good grounding in theory is a very good basis on which to found practical work. There are, of course, some men, and good workers too, who are inclined to sneer at the theory, and state that it is unnecessary. So it may be, but a man is none the worse for knowing it.

On the other hand, there are some men who lay far too much stress on theory and experimenting and are unable to carry out the same in practical work. There is yet a third class of photographers, not confined either to amateurs or professionals, who, having got a certain smattering of practical knowledge, are content to work on year in and year out, who make no advance, and who never read a photographic book or paper, and sneer at those who do. These are generally the self-satisfied Sir Oracles who have nothing to learn and whom nobody can teach. They know everything.

Dr. Schlichter, in the current number of the *Geographical*

Journal, suggests a new use for photography, viz., the determination of geographical longitude. By means of a specially constructed camera of simple design he photographs the moon and one of the principal fixed stars within a very short time, on the same plate, and after development the distances between the star and one of the moon's limbs is measured, and a few simple calculations give the correct result.

PROFESSOR MARSHALL WARD'S paper, treating of the action of light on bacteria, which should have been read at the P.S.G.B. Conference, was given last week at the Camera Club. He stated that light kills bacteria germs, and that a contention has arisen as to whether the light really kills the germs or renders the gelatinous film in which they rest unfit for their food. He experimentally attacked this problem by pouring a film of distilled water, to which germs had been added, over a glass plate, allowing it to dry, then exposing a part of it to sunlight under a letter cut in a stencil plate. Afterwards he covered the whole surface of the plate with a film of agar-agar, and allowed incubation to go on under the gelatinous layer; the result was that bacteria developed only upon that part of the plate which had not been exposed to light. Sunlight kills the germs more rapidly than does the electric light, but the spectrum of the electric light is much more active than that of sunlight in killing them by rays extending far into the ultra violet; he showed photographs of the spectra thus obtained. A quartz optical system had to be used in the latter class of experiments, in which he had been much aided by Doctor Oliver Lodge; glass cuts off most of the ultra-violet spectrum.

WE publish elsewhere a short article on "Lunar Photography," by the Rev. T. Perkins, F.R.A.S., which he has kindly sent us as a help to a correspondent, and to us personally, as we had promised to look up the subject. We shall always be very glad if anyone, seeing our answer to a correspondent, will, if he can, supplement the information we give by personal experience.

THERE seems to be some little doubt in some of our readers' minds as to the precise meaning of the term that "competitors must send in all entry forms with their slides or prints." This means that a competitor must send in with his prints or slides all entry forms which have been printed in the paper since the date of the last competition.

LAST year we made an appeal to our readers on behalf of a charitable lantern society. We have now received the annual report of this, "The Silver Star Society," and we make a further appeal on their behalf. Their aim is to give unsectarian lantern lectures to children and adults, and lantern slides of any kind would be gladly welcomed. If our readers will send us the slides we will double the number by adding another lot to them.

THOSE who are desirous of joining the Central Photographic Club without paying an entrance fee have got to hurry up, as the membership roll is increasing fast, and as soon as 300 is reached, one guinea entrance fee will be enforced.

THE arrangements for the club for this month are:—November 10th, Mr. S. H. Fry on "Printing-out Processes;" 15th, Smoking Concert; 24th, Mr. Paul Lange on "Norway;" 27th, "One-Man Show," Mr. Thos. Fall; on 31st, Mr. H. M. Smith on "Films *v.* Glass," although this is not definitely settled.

WE regret that pressure on our space this week compels us to withhold several articles and notes, and to curtail others.

Flotsam and Jetsam.

THE stage has taken to photography with all the enthusiasm of a new convert. "Binks, the downy photographer," will not yet be forgotten, and now here is Mr. Hawtrey's new piece, "Tom, Dick, and Harry," which bids fair, according to those autocratic critics, to rival the "Private Secretary," depending altogether upon a photograph for the *motif* of its fun.

AN irascible old General's son falls in love with the companion of the girl whom his father intends him to marry, and being incontinently sent packing by the General, seeks to prosecute his suit by making up according to a photograph which he finds in the garden of the hotel where the action chiefly takes place. This photograph is that of a man who has recently been dismissed from a lunatic asylum, who has an hysterical wife and also a twin brother. The complications may be imagined. Is there going to be a dramatic run on photography?

PROBABLY no Englishman takes very seriously what goes on in South America, where they have a new Government almost every year. But after a lecture they heard in their Mechanics' Institute last week, the good folk of Berkhamstead, in Herts, will look with even more than the usual contempt at the paragraphs they read at breakfast about affairs in Brazil.

SIR BENJAMIN STONE, F.G.S., while lecturing there, put the theory of a revolution roughly thus: "When the Governor for the time being had exhausted the Treasury, there was a revolution, and some one else had a turn, until more taxes were required, when there was another revolution." Sir Benjamin carries weight, too, for he went out with the recent Solar Eclipse Expedition to Brazil.

BUT his best story was to this effect. When the revolution which drove out the Emperor took place, the commander of the insurgents planted his cannon in the Cathedral Square "to fire out the Governor." "When they got into position they sent for the local photographer. They then went to work, after being photographed, and bombarded the place, killing some people, and out the Governor went."

"THEN they marched up to the house, where they were again photographed, and afterwards entered the room or salon which had been perforated by the shots, and posed for picture number three." And these photographs Sir Benjamin actually had in his possession and exhibited by the aid of his lantern at the conclusion of the lecture.

THERE was another story, unaccompanied by photographs, but still one which it is impossible to resist telling. It rests on the authority of a British consul in one of the Brazilian cities. The governor was "fired out," a new governor appointed, and then two days afterwards a telegram came to say it was all a mistake. So the new governor was ousted, on pain of being "firedd out," and the old one reinstated. And the whole city attende the funeral of those unhappy individuals who had got in the way of shot during the "firing-out" process.

Tit Bits says—no! it has nothing to do with the "'82 puzzle"—that a St. John's Wood photographer recently made a sad muddle over a portrait he took of a man who bore a remarkable resemblance to Mr. Asquith, the Home Secretary. Mr. Asquith used to live at Hampstead, it should be said. Convinced that his sitter was no less a person than the Home Secretary, he politely insinuated his desire to possess the right to sell copies of the portrait.

THE man was at first astonished, but ultimately suggested

that £10 would buy all such rights. A few days after Mr. Asquith received a cheque for £10, and St. John's Wood was full of so-called portraits of the Home Secretary.

ANCHORITE.

Letters to the Editor.

PLATE-MAKERS' FORMULÆ.

SIR,—May I direct attention to the error of plate-makers in the formulæ they send out with their plates. I had a gentleman staying with me this summer who after using one make of plate, and keeping exactly to the instructions for developing, could not get a good negative, for the simple reason that I wish to point out herein. Another gentleman in our town has started in the photographic art, and has met with the same difficulty in development. The one I had staying with me brought his cameras, etc., and, of course, began to make exposures in "our picturesque Wales," and time came for development. I went with him into the dark-room and commenced to make up my usual developer, and when I mixed same, "the Ilford pyro and soda," exactly as given with each box of plates, I only used half the quantity of pyro, and quarter the quantity of soda solution, and make up to sufficient developer to cover the plate with water, and the result was a perfect negative. As the formulæ do not say a word about the addition of water, many think it would be altogether wrong to add water. And for subjects with quantity of whites I add as much as three times the quantity of water as the quantity of the developer; for instance, for ordinary portraiture an ordinary half-plate correctly exposed, or nearly so, we want two ounces of developer. Now to use equal portions of each as directed by plate-makers means both failure and waste of developer, but use the solutions thus :

No. 1, Pyro solution	4 drams.
No. 2, Soda	2 ,,
Water, to	2 oz

and the negative will develop up slowly and surely, and to complete development add another 2 drams of No. 2, soda solution, together with 2 drams of water, pour back developer into your measuring-glass and flow again over the plate, and it will complete development from beginning to end in ten to fifteen minutes right through the plate and not lose in fixing.

My neighbour exposed two plates yesterday and developed according to instructions with plates, and his result was a black plate with only the rabbet marks plain glass. Scarcely a ghost of an image of any sort. Hoping that this may prove somewhat useful to amateurs, of whom no doubt all, or nearly all, patronise your valuable paper—Yours truly, F. TIMS.

Welshpool.

[We think our correspondent is a little hard on plate-makers. The formulæ given on the boxes is adapted for correctly exposed plates, but if one factor is altered it becomes necessary, of course, to alter the others. We shall be glad to hear what others have to say.—EDITOR.]

* * * *

PHOTOGRAPHIC SURVEY.

SIR,—In reply to the letter of "L. F. S." in your issue of to-day, may I say that the International Bureau of Photography which was formed at the Chicago Exposition, and which has members in all parts of the world, has as one of its objects the encouraging of photographic surveys. The ultimate object is that all the photographic surveys should be federated, that depositories for the photographic records should be provided by local authorities with ample facilities for students to study such records, and that national depositories for the storing of the most interesting and valuable negatives, and for the production and exchange of prints, lantern slides, etc., therefrom, should be established in all parts of the world. If your correspondent or any other of your readers are open to do anything in the matter, I shall be glad to hear from them. I will give them any assistance that I can at present, and in a week or two will send them printed matter on the subject, which is now in preparation.—Yours faithfully,

H. SNOWDEN WARD,
Chairman of the International Bureau of Photography.
Memorial Hall, Ludgate Circus, E.C., Nov. 2nd, 1893.

* * * *

BRISTOL EXHIBITION.

SIR,—Mr. H. P. Robinson's letter published in the photographic press of last week would have elicited no reply whatever from me had it not contained such evident misrepresentations, such animus and desire to damage this exhibition, and such a display of discourtesy in publishing his letter without any intimation to me that he was about to do so. This action has rendered plain speaking imperative.

Firstly, Mr. Robinson says, "I cannot find a class to which I or those who think with me could contribute." If that be so, I am sorry, but it is evident very few "think with him," as is proved by the large number of entries already received from leading workers. If Mr. Robinson cared to send his exhibits they would have been properly hung and fairly judged; he prefers not to do so; well, he must please himself, we shall simply have one exhibitor the less. His next reference, that to the Photographic Society of Great Britain, is quite incomprehensible to me. The Photographic Society of Great Britain no more concerns my Council than would the Bristol and West of England Association influence the exhibition rules of the former society, or any other society "of Great Britain."

I may here remark that our rules, which Mr. Robinson refers to as an "almost immediate reply" to the deliberations of the P.S.G.B., are the same as were formulated thirteen years since for our first exhibition, and which gave then, and have since given, universal satisfaction to all save Mr. Robinson himself.

With regard to that gentleman's reference to the Photographic Society of Great Britain, it would interest us to know whether he is authorised by them to write so, as in that case we should be pleased to reply to his expressions at an early opportunity.

And let me say I write with no ill-feeling whatever towards the Society in question, but as Mr. Robinson throws it in our teeth I am compelled to answer his reference thereto. As that gentleman kindly allows that we have a right to make our rules as we please, we ought, I am sure, to feel very grateful to him; but when he tries to play "Sir Oracle" in the last paragraph of his letter, and endeavours to coerce others, with such an evident and petty desire to injure the exhibition, let me say he may spare himself the trouble, as already, with a month to spare, we have such a large number of first-class entries that the complete success of the exhibition is assured.

Mr. Robinson appears to have overlooked the paragraphs in our schedule which have placed in the hands of the judges the power of withholding medals, and the awarding of extra medals at their discretion. We are the more surprised at this as he has exhibited in Bristol previously, and has taken awards; and herein apparently lies the sore point. Let me explain, Mr. Robinson has probably not forgotten some unpleasant correspondence which originated with himself relative to one of his awards, and which, if published, might interest your readers as throwing light on, and giving the reason for, his published letter of last week. Will Mr. Robinson oblige?

Finally, we shall, in due course, publish the list of the jury, who will in every respect command universal confidence, and who will—as have our juries in the past—make their awards according to *merit*, and quite *irrespective of tradition*.

We have every reliance on the great bulk of exhibitors fully approving our rules and supporting the exhibition.

I regret, Sir, that Mr. Robinson's most unusual procedure should have caused me to occupy so much of your valuable space, for which many thanks,—I am, Sir, yours faithfully,

FREDK. BLIGH BOND, Hon. Sec.,
Bristol International Photographic Exhibition.

Reviews.

Art Essays by John Burnet. Published by Percy Lund and Co., Memorial Hall, London, E.C. Price 2s. 6d.

Burnet's Essays have long been a standard work for art students, and the original editions were very costly, and have for a long time been out of print, and were only to be met with occasionally in second-hand bookshops. That these essays have long formed a rich storehouse for present photographic writers on art and composition is a well-known fact, and the publication of this book will place within the reach of all the original source.

The book is well printed, and contains reproductions of the illustrations of the original, and includes "The Education of the Eye," "Light and Shade" and "Composition." It is a work which should be well studied by every photographic worker, and the price is so reasonable that all may buy it.

Photographic Printing and Enlarging by the Carbon Process. Reprinted from the *Photographer's Record.* Published by Elliott and Son, Barnet, Herts. Gratis.

This is a practical guide unburdened by any unnecessary matter, and giving all the tips required to produce successful carbon prints. At the end is a useful price list of the necessary materials which are supplied by the publishers.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER VI.

ON THE RIPENING OF GELATINO-BROMIDE OF SILVER.

IMMEDIATELY after mixing, gelatino-bromide of silver emulsions are not very sensitive. By a certain method of treatment the sensitiveness can be increased, and this increase of sensitiveness is called "ripening." A gelatino-bromide of silver emulsion prepared at 30° C. or a still lower temperature has, if used immediately, a proportionately low sensitiveness; it is scarcely half as sensitive as an ordinary wet collodion plate. Such an insensitive emulsion contains "unripened" bromide of silver; it is most probably identical with Stas' finely divided powdery bromide of silver. This emulsion is extremely fine, but gives thin films, which allow reddish-yellow light to pass through, and appear when examined in reflected light, if the soluble bromide was in excess, a bright yellow. This bromide of silver is always formed first in mixing emulsions, especially if the temperature is low. The sensitiveness is considerably lower than that of the following modification, for which reason one distinguishes the powdery bromide of silver as "insensitive" or "unripe." By standing for a long time, but more quickly by heating in neutral or faintly acid solution, or quicker still in the presence of ammonia, and certain other preparations, the bromide of silver becomes more sensitive. The increase in sensitiveness during ripening may amount to twice or three times, and, indeed, even to fifty or a hundred times, that of the original emulsion.

(I.) RIPENING IN THE COLD.

The ripening of the gelatino-bromide of silver takes place in the cold, when the emulsion is in the form of a jelly or in the liquid state. The latter happens if the proportion of gelatine is so small that the liquid has lost the power of setting. Bromide of silver emulsified in gum arabic, also ripens in the cold.

(A) *Ripening of Liquid Gelatino-Bromide of Silver in the Cold.*

Very dilute solutions of gelatine (*e.g.*, such as contain about $\frac{1}{2}$ per cent. of gelatine) do not set in the cold. If one mixes this with bromide of potassium and then solution of nitrate of silver, an emulsion is formed which frequently contains coarse flocculent bromide of silver. If alcohol be also present, a finer precipitate is produced. In neutral or acid solution such emulsion ripens with great difficulty at 10° to 20° C.; on the contrary, quickly in the presence of some ammonia or carbonate of ammonia.

Cowan, Henderson, and others invented processes of preparing highly sensitive emulsions in this way. Usually ammonia is present during the mixing (see further, under Henderson's Process, Chap. XVII.); still, neutral solutions can be mixed and then ammonia added.[1]

(B) *Ripening of the Gelatino-Bromide of Silver in the Form of Jelly in the Cold.*

Gelatino-bromide of silver in the form of a jelly gradually gains in sensitiveness by standing at ordinary temperatures. This, Monckhoven had already observed.[2] Abney first laid emphasis on the fact that a boiled and by itself highly sensitive bromide emulsion showed even after one day's standing in the cold a rise of sensitiveness, which had much increased with the second or third day.[3] In neutral or acid emulsion the ripening in the cold is small, and amounts at the most to double.[4] In the presence of ammonia, carbonate of ammonia, or soda, the jelly ripens more considerably, a fact which Dr. Eder first published in 1880[5] and Burton and others confirmed in 1882.[6]

Emulsions which are prepared with ammonio-nitrate of silver, and digested with heat, to obtain a good sensitiveness, if not washed, contain plenty of ammonia and ripen very much when allowed to stand in the form of a jelly in a shallow dish for one or two days, or at lower temperatures in a longer time—a fact Cowan first stated.[7] Washed emulsions in the form of a jelly also ripen, even under water, in a marked manner in one day; the sensitiveness often rises to double. With a thoroughly dry gelatino-bromide of silver emulsion, or one kept under spirit (dehydrated), Dr. Eder has proved that there is no great increase of sensitiveness after three months. A change in the sensitiveness of emulsion dry plates has not up to the present been proved. That plates by keeping, however, still suffer an alteration in quality will be pointed out further on.

(II.) THE INFLUENCE OF THE SETTING OF GELATINO-BROMIDE OF SILVER ON THE RIPENING. (TWICE MELTING.)

A second setting and melting of the emulsion exercises a favourable influence on the sensitiveness. Henderson[8] asserts that if one divides an emulsion into two parts and keeps the first melted, and lets the second part alternately just melt and set again directly, this last is half again as sensitive. This is used in manufacturing emulsion, to make a rather insensitive, free-from-fog emulsion more sensitive. Many makers only use an emulsion which after washing has been allowed to melt and set; it is then used the next day, or kept for one or two weeks in an ice cupboard. A trace of soda or ammonia promotes the ripening very much.

(III.) RIPENING OF THE EMULSION BY DIGESTION IN HEAT.

(A) *Unwashed Emulsions.*

If a gelatine emulsion of normal concentration,[9] which contains bromide of silver emulsified with excess of soluble bromide, and the nitrate formed by the double decomposition of the silver nitrate and bromide salt is heated for a long time, finely divided granular bromide of silver is formed, which always gives very fine emulsions. Thin films appear yellowish green (tending to olive green) in reflected light; by transmitted light, blue to reddish-violet. This bromide of silver is extraordinarily sensitive to light,

[1] Burton mixed the emulsion, which contained very little gelatine (1:800 liquid), at 77° C., cooled it as quickly as possible, and added 1 per cent. of ammonia; and after four days he obtained the sensitiveness of a cooked emulsion (*Brit. Journ. of Phot.*, 1882, p. 18).

[2] *Photo. Archiv*, 1880, p. 197.

[3] *Photo. News*, 1880, p. 567.

[4] If one leaves washed emulsion standing for 3-8 days in a cold place, and is careful that it does not putrefy by sprinkling it with spirits of wine containing carbolic acid, the sensitiveness increases only a little; on the other hand, the increase of intensity (density) of the negative is very marked.

[5] The first edition of this work, p. 15.

[6] *Photo. News*, 1882, p. 281.

[7] *Photo. News*, 1882, p. 753.

[8] *Photo. Wochenbl.*, 1883, p. 304.

[9] By emulsions of "normal concentration" Dr. Eder means such in which, from the commencement, all the gelatine and salts and the whole of water have been mixed; thus about 30 parts silver nitrate, 24 parts bromide of potassium, 30 to 50 parts gelatine, and about 600 parts water; as distinguished from those emulsions, which are emulsified only with a part of the whole gelatine and the remainder added after the digestion is finished.

and is known, therefore, also as "highly sensitive or ripened" bromide of silver. (On the connexion between the colour of the emulsion and its sensitiveness, see also further on.)

By further heating, and other circumstances which favour the aggregation of the particles, the finely divided granular bromide of silver can become coarse-grained. It is then, indeed, still highly sensitive, but the coarse grain makes the films photographically valueless. It would be an error, however, to believe that coarse-grained bromide of silver must always be more sensitive than the fine-grained.

If silver nitrate, excess of bromide of potash, gelatine and water are mixed, and left to stand for several days in a water bath at 30-40° C., the sensitiveness rises from about double to ten times the original, on which fact Bennett[1] founded, first in 1878, a process for the preparation of a sensitive emulsion which, on account of its tediousness and because the gelatine was strongly attacked, was soon given up. In this and similar ripening processes, the grain of the bromide of silver increases, after five days, from ·0008 mm. to ·003 mm. (Eder[2]). These statements apply especially to bromide of silver with excess of soluble bromide. The bromide of silver prepared with excess of siver nitrate, carefully washed and then emulsified in gelatine, soon undergoes a decomposition by digestion. The bromide of silver digested with excess of bromide of potassium, slowly but gradually increases in sensitiveness to light, and soon surpasses the former in this respect.

If the digestion of the gelatino-bromide of silver is continued very long (8-14 days and over), the finely divided granular bromide of silver suffers a further noticeable increase of grain. It forms clots of about ·02 to ·04 mm. These are even visible to the naked eye, and chiefly consist of decomposed bromide of silver, which also blacken in the developer without the action of light. In this case the plates are said to show "fog." Lessening the gelatine, the absence of excess of bromide of potassium, as well as raising the temperature above 60° C., favours the formation of these clots; the presence of bromide of potassium, etc., prevents it for a long time. It is characteristic that the larger particles of the finely divided granular bromide of silver blacken much more easily in the developer than the particles of the finely divided powdery variety.[3] The said very large clots of bromide of silver especially blacken in the normal developer *without any previous action of light.*[4] The capability of chemical reduction of the bromide of silver, is increased and facilitated by the increase of density, just as the power of being reduced by light is increased in the same way. The developed and fixed negative shows in the metallic silver a more or less fine grain, which corresponds with the grain of the bromide of silver.

At 60° C. the emulsion, after a quarter of an hour, is only partly transformed into the more sensitive state, but after 1-3 hours almost thoroughly. It allows only a little red light to pass through, and has ripened more after four hours, than at this temperature (60° C.) after four days at 40° C. The molecular change of the bromide of silver takes place most quickly in boiling water at 100° C. It is frequently finished after ten minutes' boiling, and after half or one and a half hours nearly always completely, and one obtains about the same sensitiveness as after the six days' digestion at 35—40° C.[5] Generally Dr. Eder has found that half an hour's heating at 100° C. gives about equal effect to a bromide emulsion as a one to two hours' digestion at 70 to 80° C. According to Graeter a quarter of an hour's cooking in Papin's digester at 140° C. (four atmospheres' pressure) gives the same result as one hour's boiling at 100° C. With longer than half to one hour's boiling fogging of the emulsion generally (but not always!) appears. This depends on the quality of the gelatine.

(B) *Ripening of the Washed Emulsion by Heat.*

If a washed gelatine emulsion is kept liquid for a longer time by a gentle heat, the sensitiveness of the same markedly increases. Well-washed emulsions, which have a perfectly neutral reaction and are perfectly free from fog, can be heated for six to eight hours at 38-40° C., and the original sensitiveness thereby increased about a half; immediately before coating, however, chrome alum must be added to the emulsion (see Chap. VIII.), in order to prevent the gelatine frilling from the glass. In the presence of a trace of acid the supplementary ripening of a washed emulsion takes place only in a very small degree. With a slightly alkaline reaction of the emulsion, however, the rise in sensitiveness is very noticeable; especially with ammonia, carbonate of ammonia, or soda. In order that these alkalies should produce no fog in the digestion of the washed emulsion, it is advantageous to add a trace of bromide of ammonium (see Chap. VIII.).

(IV.) Influence of the Concentration of the Liquid on the Sensitiveness of the Emulsion.

(A) *Ripening of the Emulsion in Solutions Rich in Gelatine.*

It is by no means indifferent as regards the result, whether in mixing bromide of potassium and gelatine with solution of nitrate of silver, the solutions are diluted with much or a little water. On this point Monckhoven a long time ago remarked.[6] Emulsions diluted with a little water ripen quicker. A concentrated emulsion acquires a greater sensitiveness by boiling for ten minutes, than one twice or three times more dilute in thirty minutes. Too strongly concentrated emulsions fog (under otherwise similar conditions), often even after twenty minutes' boiling, and should be strongly acidulated with hydrochloric or nitric acids, whilst the diluted will stand three-quarters to two hours' boiling.

So that concentrated emulsions should not precipitate by boiling coarse-grained, gritty, or clotty bromide of silver; they must contain a fair amount of gelatine, about ten per cent. A considerable concentration of solutions poor in gelatine is not accompanied by any gain, because so much bromide of silver falls to the bottom.

(B) *Ripening of the Emulsion in Solutions Poor in Gelatine.*

If bromide of silver is emulsified with the normal quantity of water, and a rich proportion of gelatine (*e.g.*, equal quantities of bromide of silver and gelatine), the ripening takes place by heat rather slowly. If one lessens the proportion of gelatine considerably, *e.g.*, to 1-10th of the

[1] *Photo. News*, 1878.

[2] See Eder, "Mikroskopische Messungen bei Bromsilber Gelatine Emulsionen," *Photo. Corresp.*, 1880, vol. 17, p. 30.

[3] If one coats plates with such emulsion, the coarser granular bromide of silver sinks down on to the glass. In developing, the upper surface of the film remains clear; underneath, however, it quickly fogs.

[4] This observation Dr. Eder made in his microscopical measurements and comparisons of various plates before and after development. (See *Photo. Corresp.*, vol. 17, p. 30.)

[5] The priority of the discovery, that bromide of silver emulsion passes over into the highly sensitive modification quicker at a high temperature is due to two Englishmen. Wortley found, as is well known, that digesting the gelatine emulsion at 60° C. made it in a few hours just as sensitive as digesting it at lower temperatures for many days (*Brit. Journ. Phot.*, 1876, vol. 23, p. 307). It is less known that Mansfield, of the Photographic Society of Ireland, proposed on the 13th Aug., 1879 (*Brit. Journ. Phot.*, 1879, vol. 26, p. 403), to keep the emulsion cooking for ten minutes, instead of digesting it in lukewarm water for a long time.

[6] *Photo. Archiv.*, 1880, p. 192, from "Traité Général de Photographie."

weight of the silver nitrate, *the proportions of mixing, remaining otherwise equal*, the ripening takes place quicker, by boiling, as well as by digestion with ammonia, and the sensitiveness can generally be raised higher. The bromide of silver appears in the very thin poor in gelatine solutions to be transformed more easily into the sensitive modification.

It is frequently customary in the preparation of the emulsion *not to use the whole quantity of gelatine*, but only one-third to two-thirds, or a smaller portion still, as in Henderson's emulsion, and the rest is added only after digestion is finished. By this means the jelly becomes more capable of resistance. Burton, indeed, went the furthest in this direction; he added only 1-800th of the gelatine to the water, whilst emulsifying, and allowed the very strong watery emulsion to settle down; the sediment of bromide of silver was then again emulsified in a sufficient quantity of gelatine (see Chap. XVII.). This process Dr. Eder found, however, not practical, since the negatives prepared therewith wanted vigour and brilliancy.

If the quantity of water in the whole mixture is very small and the quantity of the gelatine is also lessened, very sensitive bromide of silver is formed under these favourable circumstances; but the concentrated solutions of silver and bromide salts furnish, from want of sufficient gelatine, coarse and granular (even flocculent) emulsions of bad photographic qualities.

Ammoniacal emulsions, in the presence of little gelatine, give quickly very sensitive emulsions, yet so-called green fog is easily formed in developing the image with pyro and ammonia.[1] The film is also strongly transparent, and the gradation in the high lights is bad and the plates fix slowly. The process is carried out better in solutions very poor in gelatine, if alcohol be also present. (See further, Chap. VIII.)

(V.) Influence of Heat on Dry Gelatino-Bromide of Silver.

Compare on this point Chap. X.

(VI.) Influence of Ammonia and Other Alkalies on the Ripening of the Gelatino-Bromide of Silver.

One must discriminate well between the action of ammonia and the alkalies (*a*) on the gelatino-bromide of silver during its preparation, and (*b*) on the prepared emulsions or plates.

(A) *Action of Ammonia, etc., on Liquid Unwashed Gelatino-Bromide of Silver during its Preparation.*

Johnston suggested in the "Photographic Almanac" for 1877, p. 85, the addition of some ammonia to the emulsion, and Monckhoven,[2] in 1879, first laid stress on the fact that an emulsion heated with ammonia acquired in a few hours the same sensitiveness as if one heated it for several days in a neutral condition. Monckhoven later gave up ammonia, since it gives good results only under certain conditions, and frequently bad. The conditions under which ammonia acts favourably Dr. Eder first accurately determined and published in 1880.[3] Only from that time was ammonia generally worked with success.

Ammonia, carbonate of ammonia, or carbonate of soda accelerates even in the cold the ripening of gelatino-bromide of silver, which Dr. Eder published in 1880,[4] and Burton and others confirmed. These substances increase also the intensity of the emulsion, and make the emulsion more creamy. Boiled emulsion becomes by supplementary addition of these substances considerably more intense, and also still more sensitive. One can add 1 to 2 per cent. of ammonia, sp. gr. ·91, to a liquid unwashed emulsion. With this normal addition of ammonia the increase of the grain is moderate, as it generally modifies the bromide of silver, and is not in any way prejudicial to the delicacy of the image. With more ammonia, however, a troublesome, coarse grain is frequently formed, which becomes visible to the naked eye in the print. Five per cent. of ammonia strongly attacks the gelatine by heating, robbing it of its setting power with long digestion, and frequently causing fog. With a longer digestion, twelve to twenty-four hours, with ammonia the bromide of silver, is partially decomposed and gives fog. At higher temperatures than 50° C. an unwashed emulsion which contains 1 - 2 per cent. of ammonia, sp. gr. ·91, frequently gives fog. Some gelatine stands, indeed, half-an-hour's digestion with ammonia at 70° C., and bromo-iodide emulsion is much more capable of withstanding it than pure bromide emulsion. Many kinds of gelatine, however, give fog even after half-an-hour's heating with ammonia; therefore Dr. Eder recommends for general work that the limit of 40° to 50° C. should not be over-stepped, and digestion should not be continued longer than an hour. Rapid emulsions may be prepared at 50° to 60° C.

If an emulsion is boiled and after it has cooled to 30 to 40° C., a trace only of ammonia be added, so as to make the liquid alkaline, *e.g.*, 1 drop to 100 cc.m. emulsion, the emulsion ripens by standing in the cold even after one day pretty strongly. A method of preparing an emulsion is founded on this, that is, a faintly acid emulsion is boiled, *e.g.*, for half an hour, then cooled to 40° C., mixed with 1 to 3 per cent. of ammonia, and allowed to stand at this temperature for half an hour. In emulsion prepared with ammonia, and then thoroughly washed, there is no more ammonia, a fact which was confirmed by Rammelsberg's observation[1] that ammonia is completely removed from bromide of silver by washing.

The employment of caustic ammonia as a means of increasing the intensity carries with it sometimes the following inconveniences:—(1) The intensity is frequently too great, that is to say, the negatives are too hard for portraits; (2) the emulsion gives fog with bad gelatine, and frills from the plate in fixing. Yet the advantages are so great, especially with respect to the sensitiveness, that most manufacturers make use of ammonia for the preparation of emulsion.

Carbonate of ammonia acts less energetically than ammonia, and upon the favourable action of this, which is similar to that of ammonia, Dr. Eder even in 1880 had remarked.[2] Later Forrest suggested a process[3] which consisted of boiling gelatino-bromide of silver mixed with carbonate of ammonia for ten or twenty minutes. Dr. Eder obtained favourable results, when he boiled an emulsion in neutral or faintly acid solution and afterwards digested it, at about 40 to 50° C., with 2 to 5 per cent. of a solution of carbonate of ammonia (1 to 10) from half to two hours, or also allowed it to stand for forty-eight hours in the cold. The density of the negative is thus increased without giving hardness, and fog rarely occurs. At the same time the emulsion becomes more creamy and less transparent. The emulsions are, however, not so sensitive as with ammonia.

(To be continued.)

[1] With the potash or soda developer, further with the ferrous-oxalate developer or hydrochinon, this kind of green fog does not make its appearance so readily.

[2] *Photo. Corresp.*, 1879, p. 197, from *Bull. de l'Assoc. Belge de Photo.*

[3] *Sitzungsbericht der Wiener Akademie der Wissenschaften*, 1880, vol 81, April.

[4] First edition of this work, p. 15.

[1] Rammelsberg, "Gmelins' Handbuch d. Chemie," 6th edit., vol. 3, p. 961.

[2] *Sitzungsberichte der Wiener Akademie der Wissenschaften*, 1880, vol. 81, also *Photo. Corresp.*, 1880, p. 143.

[3] *Photo. Archiv.*, 1881, p. 38.

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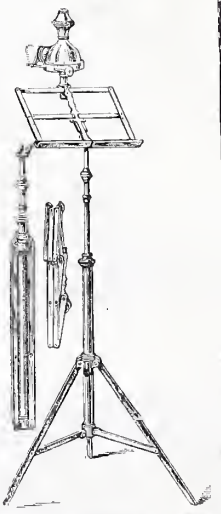
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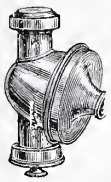




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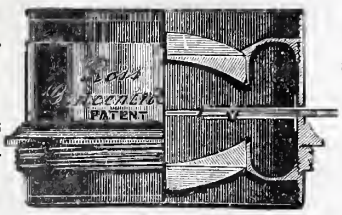
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General and Photographic Chemistry.—XX.

By E. C. Conrad, F.C.S.

TURPENTINE RESINS AND CAMPHORS.

(*Continued from page* 175.)

The Volatile or Essential Oils are obtained from plants by pressure, by distilling a watery extract, or by distilling with steam. These oils, of which there are a very large variety, occur usually as liquid hydrocarbons with camphor-like bodies. Their perfumes are probably due to the presence of aromatic ethers formed by the action of oxygen and moisture on the original hydrocarbons. These oils are largely used in medicine and as perfumes, most of which are, like *eau de Cologne*, solutions of aromatic principles in alcohol. Oil of lemon, bergamot, caraway, hop, juniper, laurel, lavender, are examples of this class of bodies.

The Fixed Oils and Fats.—Oils and fats are compounds of glycerine (*q. v.*) with an organic acid, and only differ in being liquid or solid at ordinary temperatures. Fixed oils are divided into two classes, termed drying and non-drying.

Drying Oils are those that readily absorb oxygen and harden to a resin; linseed, poppy, hemp, and nut oils are examples. Linseed oil boiled with oxide of lead dries much quicker than the ordinary variety and is known as *boiled oil.*

Non-drying Oils are those oils that turn rancid on oxidation; olive, castor, and sperm oils are of this character.

Waxes are compounds of mixed composition, being hard fats in combination with a body called ceroleine.

The most important *beeswax* is a yellowish-brown substance forming the honeycomb of bees. It melts about 65° C., and is soluble in turpentine and benzol.

White Wax is beeswax bleached by exposure to sunlight. It is rather more brittle than the yellow variety. *U.P.*: A solution of beeswax in turpentine; is sometimes used as a glaze for prints.

Chinese Wax occurs on certain trees in China, in a similar manner to lac (*q. v*).

Spermaceti is a wax accompanying sperm-oil obtained from the head of the sperm whale.

THE BENZENE OR AROMATIC GROUP.

The hydrocarbons included in this group have the general formulæ $C_nH_{2n}-6$. Many of the members have a fragrant odour, hence the name aromatic. They are derived directly or indirectly from coal-tar, produced in the dry distillation of coal for gas making.

Benzene, Benzol, C_6H_6.—M.: (1) By heating acetylene, (2) by distilling benzoic acid with lime, (3) from a coal-tar oil by washing with potash, and dilute sulphuric acid, distilling and collecting the portion coming over between 80° and 90° C. and cooling to 12° C., when the benzene crystallises out in an impure state. P.: Benzene is a colourless, mobile liquid, with an odour resembling coal-gas; S.G., 0·88; boils at 80° C.; insoluble in water, but mixes with ether or alcohol. U.: As a solvent for iodine, sulphur, phosphorus, fats resins, and many organic substances; and in large quantities for the manufacture of aniline.

Nitrobenzene, $C_6H_5(NO_2)$. M.: By adding benzene to strong nitric acid, or to a mixture of sulphuric acid with nitric acid. P.: A light yellow-coloured, oily liquid, having an odour of almonds; S.G., 1·20; boils at 220° C. U.: In the preparation of aniline.

Toluene, Methyl Benzene, C_7H_8 or $C_6H_5CH_3$. M.: By distilling sodium acetate with sodium benzoate; also by the distillation of coal-tar oil and many vegetable substances. P.: A mobile liquid, smelling like benzene, which it closely resembles in its general properties, differing, however, in boiling at 111° C., and remaining liquid at −20° C.

Benzoic Acid, $C_7H_6O_2$.—Oc.: In gum benzoin and some other balsams and resins. M.: By the oxidation of toluene; or by boiling hippuric acid, contained in the urine of cows and horses, with strong hydrochloric acid. P.: It is a faint smelling, solid substance, melting at 120° C., boiling at 250° C., soluble with difficulty in water, but readily in alcohol.

Benzoic acid forms a series of salts called *benzoates*, all of which are soluble in water.

Aniline, C_6H_7N or $C_6H_5NH_2$.—This important compound is an example of a group of substances called amido-derivatives of benzene, in which hydrogen is replaced by the radical NH_2. M.: By heating nitrobenzene with iron filings and hydrochloric acid, or glacial acetic acid, and then mixing the solid product with lime, and distilling with steam. In small quantities aniline can be prepared by heating nitrobenzene with tin and hydrochloric acid. P.: Aniline is a colourless, oily liquid, with a faint tarry smell; S.G. 1·036; boils at 184° C., liquid at − 8° C.; it is slightly soluble in water, and readily in alcohol. Aniline is a strong base uniting directly with acids, and with some salts. It is manufactured in enormous quantities for the production of the aniline dyes.

Phenol, Carbolic Acid, Phenyl-Alcohol, Coal-tar, Creasote, C_6H_6O.—Oc.: In coal and wood tar. M.: (1) By acting on aniline with nitrous acid. (2) By distilling coal-tar oil and collecting the portion passing over between 150° and 200°C, the crude product being purified by caustic potash and hydrochloric acid, the phenol being separated out by cooling the purified oil to a low temperature. P.: Phenol occurs, when pure, in long needle-shaped colourless crystals, of S.G.1·06, melting at 40° C., and boiling at 182° C. Commercially, phenol occurs as a brown liquid or in a reddish crystalline mass. It is a poisonous, strong-smelling substance with a burning taste. Soluble in 15 parts of water, and easily in alcohol and ether, and dissolves in alkalies, forming salts. Phenol is attacked by chlorine, bromine, nitric acid, and strong sulphuric acid. Test: An aqueous solution of phenol is coloured violet by ferric-chloride. U.: As an antiseptic and as a solvent for sulphur and iodine.

Cresols, Tolyl Alcohols, C_7H_8O.—Oc.: Para and ortho cresol occur in tars with phenol. M.: The cresols can be separated from phenol by fractional distillation, but are not easily separated from each other. P.: A colourless crystalline mass, melting at 32° C., and boiling at 185° C. Test: Ferric chloride gives a blue colour with cresols.

Naptha.—A general term applied to various mixtures of hydro-carbons of a volatile character and oily nature. The principal varities are:

Wood-naphtha, obtained by distilling wood.

Coal-tar-naphtha, obtained from coal-tar by distillation.

Shale-naphtha, obtained from shale oil by distillation.

Mineral-naphtha, obtained from petroleum by distillation. Mineral-naphtha is the crude product from which the following commercial compounds are obtained:

Cymogene, a volatile liquid composed of a mixture of butane, C_4H_{10}, and pentane, C_5H_{12}. U.: In ice-making.

Gasolene.—Principally hexane C_6H_{14}. U.: For carburetting water gas.

Petroleum Ether.—A mixture of hexane and pentane.

Benzene.—This liquid is used as a substitute for turpentine in varnish making.

Benzolene.—A volatile, mobile, colourless, inflammable liquid which dissolves indiarubber, paraffin, wax, etc.

Those naphthas which burn without giving off explosive vapours are largely used for lighting and heating.

THE COAL-TAR DYES.

A very large number of the colours used in dyeing are derived from aniline, anthracene, and phenol. The following list gives the most important :—

Mauve, Aniline Purple.—M. : By the action of potassium bichromate on aniline sulphate. It is a bronze coloured, brittle substance, slightly soluble in cold water, but readily in alcohol.

Rosaniline, Aniline Red.—M. : By the action of arsenic acid on aniline. Rosaniline is a basic substance, and its salts occur in commerce as *Roseine, Magenta, Azaline*, etc.

Aniline Blue and *Violet* are formed by heating rosaniline with aniline.

Iodine Green and *Perkins' Green* are formed by the action of the alcoholic iodides on the salts of aniline. The colours are principally used in calico printing.

Aldehyde Green formed by the action of aldehyde on magenta. It is used for silk dyeing.

Aurin-corallin, prepared from phenol by the action of oxalic acid and sulphuric acid. It gives a good non-actinic colour, and is used in dyeing photographic fabrics. Commercial aurin is a mixture of several compounds.

Fluorescein, $C_{10}H_{12}O_5$, is a yellowish-red powder derived from resorcein.

Eosin.—Tetrabromofluorescein, $C_{20}H_6Br_4O_5K_2+6H_2O$, and *Erythrosin* Tetraiodfluorescein, $C_{20}H_6I_4O_5K_2$, are used with fluorescein in orthochromatic photography.

The term eosin is used commercially as a general name for the derivatives of fluorescein. Other dyes occur under such names as *Fuchsin, Rose Magdala, Aniline Brown* and *Black, Cyanin, Phlorin, Purpurin*, etc.

(*To be continued.*)

Woolwich.—Meeting held on the 26th ult. The chair was taken by the President (Rev. S. E. Chettol), at 8 p.m. The report of the Council, together with the balance-sheet, were received and adopted. The accounts showed a slight balance on the wrong side—only a few shillings. The officers and Council were then elected for the ensuing year, and are as follows:—President, Rev. S. E. Chettol; Vice-President, Major C. D. Dawes; Treasurer, Mr. H. H. Barker; Hon. Secretary, Mr. J. B. Panting; Council, Messrs. H. Maskell, T. Penson, I. Calder, W. H. Dawson, P. Hobson, and E. G. Kimber. The last four named were the retiring members of the Council.

The Photographers' Benevolent Association.—Meeting of Committee in the rooms of the Photographic Society of Great Britain, at 5a, Pall Mall East, Mr. A. Mackie in the chair. Two applications for assistance. First case: Secretary reported that the applicant had called personally. He was resident in a London workhouse, had been out of work for some months, and seemed to have no definite prospect of obtaining any. On making personal application he gave two references, who had been applied to, and who had replied favourably of the man. Secretary had given him food to the value of 4d., and advised him to continue in the workhouse till his case should be considered. Applicant had been advised to attend the meeting but did not appear, and had not sent a written application. Case referred back to Secretary. Second application from an assistant out of work, who had been confined to the house for five months through serious accident, and since recovery had only one temporary situation. The testimonials from recent employers were satisfactory, but applicant, who had been advised of the meeting, was not present. The case was referred back, and Secretary was empowered to grant immediate relief. An advance of 5s. made by the Secretary to an operator, to enable him to reach situation was confirmed by the Committee. The Secretary reported *re* several cases that had been dealt with, and was instructed to press for payment of two loans that were made some time ago, and which it was thought applicants were now able to repay. Subscription of 6s. collected in the box of the office of the *British Journal of Photography* was acknowledged. Final arrangements were made for the lantern evening at the room of the Photographic Society of Great Britain, 5a, Pall Mall East, on November 10th.

Pictorial Photography; its Principles and Practice.

BY A. H. WALL.

(*Continued from page* 277.)

CHAPTER VII.—(*Concluded.*)

I AM going off at a tangent. Tempted by a quotation which appeared on page 272 of this journal as "a scathing criticism from a writer in the *Star*," I should like to say something in reply. I ought to do so, perhaps, because the whole purpose of these chapters is to show that photography may be hopefully and properly studied and practised as the fine arts are, that its greatest successes are not those of the mechanic, but those of the artist—are not due to the tools, but to the worker. It is in vain for "A. U." to tell us that he has "more than once pointed out the distinction between photography, a mechanical science, and art," when he has only asserted the existence of that distinction. And all the assertions he can make will never prove that the picture or photograph is of necessity the result of the producer's tools, and not that of his experience, culture, and talent. Who dreams of tracing bad colouring, false drawing, vulgar treatment, and gross ignorance of perspective and anatomy to the use of pigments and brushes? Or who will assert that a photograph which expresses faithfully, sympathetically, and poetically nature's appeal to our hearts and minds could not be a work of art, because the worker used a camera and chemicals instead of paints and pencils? The mere fact that two men painting or photographing the same scene under the same conditions can produce results utterly dissimilar shows how much the tools have to do with the results.

Shakespeare, Milton, Pope, Akenside, Thompson, Wordsworth, Tennyson, and many scores of great poets, who found in nature's beauties perfected loveliness may be altogether mistaken, and Mr. Whistler may be right in asserting that "Nature is usually wrong." Yet is he inevitably right? It may be true that the photographer is more dependent upon his tools than the painter is, but it has never yet been said of a landscape photograph that the Hanging Committee of an exhibition were unable to decide which was its top and which its bottom.

To admire art as something independent of Nature, and denounce photography as purely mechanical because it does not improve Nature, is indeed going back to the crude raw beginnings of primeval criticism. Is there then no poetry, no romance, nothing that is picture-like in Nature? Is there no loveliness in woman, no dignity in man, no charm in hill and dale, forest and river, cloud and sky, until they appear upon the painter's canvas? Has the flower we pluck from the garden no beauty compared with its interpretation in paint? Is it indeed "so good" to conclude that photography is, as A. U. says, merely "a mechanical contrivance," and the photograph ditto? Are the tools, and the productions made with them, on the same ignoble level? Is "fidelity to Nature" no proof of the artistic possibilities of the camera or the art ability of the painter? Does A. U.'s "scathing criticism" reduce us to the deplorable necessity of putting the camera's fidelity on a level with that of *nearly all the best artists the world has known?*

"The picture," says Ruskin, greatest of all our modern art critics, "the picture which is looked for as an interpretation of Nature is invaluable, but the picture that is painted as a substitute for Nature had better be burned. Landscape art," he says, "should be a witness to the omnipotence of God," not "an exhibition of the dexterity of man;" and yet again, "every alteration of the features of Nature has its origin in powerless indolence or blind audacity."

The *Star* critic, with his "Nature is usually wrong," and his

outcry for the painter "to set her right," reminds one of the barbarous New Hollander's custom of improving Nature by cutting off the top joint of a finger. Every painter knows that it is very much easier to realise your own fantastic conceits than it is to be faithful to Nature. The great landscape painter who astonished the art-critic of his day by daring to paint what he saw and not what he imagined he ought to see (I mean John Constable, R.A.), after visiting the Royal Academy exhibition of May, 1809, wrote in a letter to his old friend, John Dunthorne, as follows:

"For the last few years I have been running after pictures and seeking truth at second hand. I have not endeavoured to represent Nature with the same elevation of mind with which I set out, but have rather tried to make my performances look like the works of other men. I am determined to make no idle visits this summer, nor to give up my time to commonplace people. I shall return to Bergholt, where I shall endeavour to get a pure and unaffected manner of representing the scenes that may employ me. There is little or nothing in the exhibition worth looking up to. There is room enough for a natural painter. The great vice of the present day is *bravura*, an attempt to do something beyond the truth. Fashion always had, and will have, its day; but Truth in all things only will last, and can only have just claims."

In another letter written to another friend he says:

"There will be no genuine painting in England in thirty years. This will be owing to pictures driven into the empty heads of the junior artists by their owners, the directors of the British Institution, and others. In the early ages of the fine arts the productions were more affecting and sublime, for then the artists, being without human exemplars, were forced to have recourse to Nature."

In yet another letter he speaks of—

"Nature, the mother of all that is valuable in poetry, painting, or anything else where an appeal to the soul is required. The language of the heart is the only one that is universal, and Sterne says he disregards all rules and makes his way to the heart as he can."

Fresh testimony to the righteousness of this famous landscape painter's judgment was shown when some of his pictures appeared in the Paris Louvre gallery, where they had the place of honour, and convinced many of the best French painters that they were all in error—that Nature alone was right, and that a want of fidelity to Nature was a want of artistic power. "Your pictures," said a correspondent writing to him from Paris, "have taught them that *though your means may not be essential*, your end must be to produce an imitation of Nature, and the next exhibition in Paris will teem with your imitators."

If I dared introduce poetry into a photographic journal, as I should not hesitate to do were I writing for one of the art journals, it would be easy enough to show how lovingly poets regard art and nature in their sweet dependence one upon the other. Let me, however, dedicate to "A. U." just four lines from Pope, addressed to some folk who thought then, as Mr. Whistler has asserted since, that "Nature is usually wrong:"

> "Go, wiser thou! and in thy scale of sense
> Weigh thy opinion against Providence,
> Call imperfection what thou fanciest such;
> Say, 'Here God gives too little, there too much.'"

But know that the science which improves tools would be altogether useless if the worker used them clumsily and ignorantly, and that it is but a bald truism to say productions which embody the result of artistic knowledge and study have a just claim to be regarded as works of art, whether painted or photographed. In the words of a great painter, Leslie, I would say to "A. U.," "You may arrive at the honours of a poet or a philosopher; but do not attempt to do so in a language with which you have made yourself imperfectly acquainted, because you were insensible to its worth. . . . Let us remember that what is technical in painting has not yet been achieved with the perfection that may be imagined by even the greatest artists—that what is ornamental is an imitation of the ornaments with which the Creator has decorated every work of His hands, and that which is sensual is only so, in an evil sense, by an abuse of His gifts. . . . A painter may be very natural without being spiritual, but the spiritual in art can only be fully developed in the degree in which the painter is natural."

This defence of pictorial or artistic photography has carried me away with it, for the real subject of this chapter is "Water as an Element of Pictorial Effect."

When I laid down my pen after commencing this chapter, our dealings were with quiet, restful river scenery of the pastoral kind. I spoke of the associations most desirable and in keeping as those which conveyed ideas of repose and quietude; of suggesting only such sounds as whispering reeds and gently flowing water convey, with their musical dripping and baby ripples; of a placid, soft, grey sky above it, and the gentle slopes of corn and grass about it, with cattle standing still upon its banks meditatively chewing the cud, and hills melting away imperceptibly into the haze of a sultry horizon, and so on.

Turning from these pleasing features, let us follow the course of a rushing stream, swirling, and dashing, and leaping in and out, and round about, and over the jagged and sharply angular edges of rock, throwing up foam and spray, forming here and there cascades, and here and there broadening into pools which gleam out at you with a ghastly glare from dark patches in the mournful solitude, or disappear in treacherous masses of moss and mud. There is no trace of human beings, no sign of cottage or farm. Masses of loose stones suggest elemental warfare or torrent's angry fury, and a few torn-away branches swept down with them lend force to the chief characteristics of savage wilderness and solitude. Obviously the effects to be watched for and waited for are those which lend force to ideas of gloom and terror, stony barrenness, and a silence unbroken by any voices but those of the mournful wind and roaring water. Such and similar scenes are to be found in the wilder parts of Cumberland, Cornwall, Devonshire, Yorkshire, Westmoreland, and Wales, Ireland, and the Scottish Highlands. They are, like the pastoral solitudes, lonely and quiet and solitary. But how differently these ideas are expressed! Sharp, abruptly broken angles have taken the place of flowing lines softly melting one into the other; strong abrupt lights, and the deep sudden shadows of cavernous hollows and overhanging precipices have taken the place of less gloomy shadows, dying away into softly graduated lights, and massing themselves together in subtle gradations of gradually changing tones. Who shall say, when these effects are looked for and secured, and the photographer can thus make others think the thoughts and feel the emotion such a scene filled him with, that his production is not a work of art? That such photographs can be secured is now too well known a fact to be honestly disputed. That they very seldom are secured is only a proof that photographers are not often artists, not that photographs never are pictures.

Who that has wandered along the banks of the Wye cannot recall a panorama of changeful river scenery in which there was a constant diversity of incident, interest, and appearance? All along the banks of the Thames from London Bridge to the Nore, or to Richmond and Windsor, what a wealth of subject matter awaits the camera, changing with almost every yard of progress! How well, too, the beauty of Thames scenery has been recognised by great painters! What strange and curious stories are associated with it! What phases of human labour and life, what romantic traditions lend it interest!

And then again the sea. What a world of novelty and freshness have yet to be harvested in our pictorial records by cameras at sea, by artists with eyes quick to see what the trained perceptive powers teach them to look for, scenes of storm and calm, might and majesty, from the shore or from the wave. Recall what Stanfield and J. C. Hook have done in this

direction, and aim high even if you hit low. There is one hint which I will add, because it comes from practical experience: When photographing sea waves, so place the camera that the angle at which the light reaches it from the waves conveys it in a softened condition, and the reflections in the shadowy passages are not sacrificed or lost to sight. The reflections in this state have greater actinic power, and the more directly lighted portions have the rapidity of their chemical action somewhat diminished. It is, however, difficult to make my meaning very clear without examples, and these, I regret to add, are not within my reach.

Wet Collodion for Beginners.

(*Continued from p.* 283.)

BY CHARLES W. GAMBLE.

III.

WE now come to the preparation of the "bath," which is the term applied to the solution of silver nitrate used for sensitising the plates. It is of the greatest possible importance that this solution be properly prepared and kept in good condition, for if the bath is out of order the student will not succeed in obtaining good negatives, however careful he may be in other respects. Much has been written and spoken upon this subject, and many beginners are apt to think that the "care of the bath" is one of very great difficulty. We have not found it so when a proper amount of care and attention is given to the matter, and we think that if our readers will follow the simple rules we shall give in the course of these articles, they will succeed as we wish them to do.

For the preparation of the solution we shall require apparatus and chemicals as follows:—

The 20 oz. bottle with tap and stopper.
One 30 oz., one 10 oz., one 2 oz. glass stoppered bottles.
Four-inch funnel.
A pint (or half-pint) and 2 drachm measures.
A glass rod.
Scales and weights.
Blue litmus paper and cotton wool.

Well wash the bottles, rinse with distilled water, and drain. The bottle with tap must be allowed to dry *inside*.

Chemicals.—Silver nitrate, potassium iodide, sodium carbonate. Distilled water.

We may now begin to prepare the solutions.

No. 1.

A solution of potassium iodide. Only a small portion of this solution will be required, the remainder can be kept as a stock solution for future use when required.

Potassium iodide	8 gr.
Distilled water	1 oz., fluid

Cut two pieces of perfectly clean paper (writing paper will do), say 2 in. square, and place one on each of the scale-pans. In one of the pans place an 8 gr. weight and carefully weigh out the quantity of potassium iodide as given. Place the substance in the 2 oz. bottle, and then add 1 oz. of distilled water. Place the stopper in the bottle and shake until the contents are dissolved. Now label "*Potassium Iodide for Iodising Bath.* One fluid drachm = 1 gr. potassium iodide."

The bath solution is now to be made. The strength of the same (or the weight of nitrate of silver to a given bulk of water) varies according to the collodion used. For our present purpose, using the ordinary bromo-iodised collodion of commerce, a solution containing 30 gr. of nitrate of silver to the fluid ounce of water will be sufficient. Some operators prefer to use *triple* crystallised nitrate of silver, but this is not necessary, as a good sample of the ordinary crystallised nitrate, such as is supplied by respectable photographic dealers or operative chemists, will answer the purpose, and it is less expensive. A point of great importance in the preparation of the bath is the purity of the water, perfect freedom from organic matter being necessary. Ordinary water is used by some; it is not, however, to be recommended. The writer always uses distilled water for the purpose, but he feels it necessary to say that many samples of distilled water are very far from pure. The water steam in some factories is condensed, and the product supplied for distilled water. In most cases it contains oily matter and other contamination. Distilled water should be quite colourless and free from taste and smell. When acidified with pure nitric acid, it should give no trace of opalescence when a solution of nitrate of silver is added to it. If a small quantity of silver nitrate be dissolved in the sample of water and the solution exposed to light, it should show no sign of darkening. As, however, it is difficult to obtain water in such a state of purity, a method will be described by which taking any fair sample, a bath can be prepared of the proper degree of purity. We therefore proceed as follows, the quantities being for 20 oz. fl. of solution:—

No. 2.

Silver nitrate	600 gr.
Distilled water	5 oz. fl.

Place two pieces of *fresh* clean paper on the scale pans as before, and weigh out the silver nitrate as above. Now take a 30 oz. clean glass-stoppered bottle (which has been thoroughly cleansed and afterwards rinsed out with distilled water), and place in it the silver salt and then add the water, stopper the bottle and shake until the contents are dissolved. Now measure out one fluid drachm of the No. 1 solution, pot. iodide, and pour same into the solution of silver nitrate. This will at once produce a yellow precipitate of silver iodide, which will dissolve on agitating the solution. Add now to the contents of the bottle 30 gr. of sodium carbonate *in crystals*, stopper the bottle, and *well shake* the same. A yellowish-white precipitate of silver carbonate is formed, which neutralises any free acid that may be present, any excess of the precipitate remaining in suspension. The stopper of the bottle is removed, and the solution is diluted by the addition of 15 oz. more of distilled water. As the last few ounces of water are added a yellowish precipitate will form. This is silver iodide thrown down owing to the dilution with water. The bottle containing the bath is now exposed to daylight for a couple of days. The precipitate will gradually darken, and any organic matter that may be present will be destroyed at the expense of a small quantity of the nitrate of silver, and thus the bath will be freed from this impurity. The solution will now have become quite clear, and care should be taken not to disturb the sediment. The next operation is to filter the "bath." Many operators keep the solution when out of use in an ordinary bottle. If this is done it is difficult to avoid constant filtration, as in use—even with the greatest possible care—a certain amount of dust will reach the solution which will cause trouble if not removed. Filtration of the bath is an operation which the writer prefers to avoid as much as possible. It is somewhat wasteful, takes up time, and may lead to contamination of the solution if the filtering medium is not perfectly pure To avoid this, decantation is often adopted, the solution being carefully poured out of the bottle, taking care not to disturb the sediment at the bottom. This takes no account

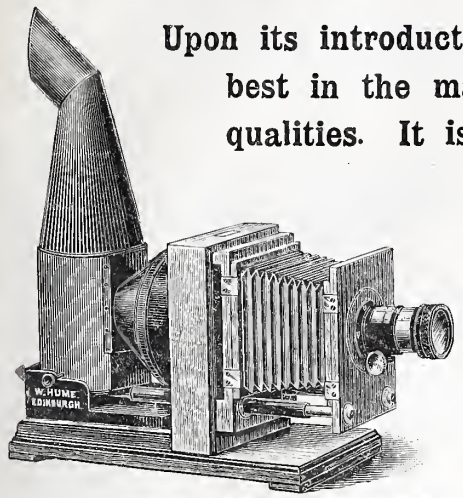


FIG. 2.—BOTTLE FOR "BATH" (SHOWING TAP TURNED ON).

of the matter floating on the surface of the solution, and the writer strongly recommends the plan he is about to describe. A white glass bottle (having a capacity sufficient to hold the amount of bath solution), stoppered at the top and with a glass tap at the bottom * is used. This tap will allow the solution to be drawn off, with the

* Such a bottle can be procured from an operative chemist's. The bore of the tap is in some cases rather narrow, but one with, say, ¼ in. bore will be supplied to order.

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Folding Rails	0 10 0	0 14 0	1 0 0	1 0 0	1 3
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IN HANDSOME CLOTH CASE.

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exception of a layer of about ½ in. at the bottom. If the "bath," after use, be poured into this bottle and allowed to stand, any sediment will settle to the bottom below the line of the tap, and any lighter matter will float to the top. The solution between will be quite clear, and at any time after the bottle has stood a fair time, the operator, by turning on the tap, can draw off nearly all the solution with the certainty that it is quite clear and free from insoluble matter, provided that the surface of the liquid does not come below the tap. When running out the solution the stopper should be slightly raised. *When not in use the bottle containing the bath should always be exposed to daylight.*

The method of keeping the bath described above is simple and effectual, and the writer is certain that those who adopt the plan will not readily change.

Before taking the bottle into use it must be very carefully cleaned and rinsed out with distilled water and then allowed to dry *inside*.

The bath solution, which has been exposed to light in the bottle in which it was prepared, is now to be filtered. This first filtration is almost unavoidable unless a portion is to be wasted, as it will scarcely be possible to decant the whole without disturbing some of the sediment. Take the 4 in. funnel, which must be dry, fit in the neck a pledget of cotton wool, and support it over a clean dry beaker. Pour into the funnel about a couple of ounces of the bath solution, taking care not to shake the bottle. See that the filtrate is clear. If so, place the funnel in the neck of the proper bath bottle (see that the tap is turned off), and pour the solution from the beaker into the funnel, and let it filter into the bottle. Continue the filtration until the whole of the solution has passed through.* It should be perfectly clear and colourless. The bath is now to be acidified with nitric acid. This must be very carefully done, excess of acid reducing the sensitiveness of the plates. Measure out ten minims of pure nitric acid into the two-drachm measure and dilute with distilled water to 100 minims. Add this solution minim by minim to the "bath" until a drop of the silver solution withdrawn by means of a glass rod just reddens a strip of blue litmus paper. From ten to fifteen minims of the *diluted* nitric acid will probably be required. Now place, by means of a brush dipped in black varnish, a mark on the outside of the bottle level with the solution. This is the *contents mark*. With use the total bulk of the bath will be reduced and the actual strength (number of grains of nitrate of silver per ounce) will fall below the limit. The bath must therefore be brought up to the original bulk, and strengthened, and this is best done after each time of using.

Proceed as follows:—

No. 3.

Silver nitrate	360 gr.
Distilled water	5 oz. fl.

Dissolve the silver nitrate in the whole of the water, add 15 grains of sodium carbonate in *crystals*, shake the bottle, expose to light for a couple of days, and afterwards filter carefully into a clean glass-stoppered bottle. Label: "Silver Nitrate; for strengthening 'Bath.' 1 oz. fl. = 60 gr. Ag NO_3." After each time of using, the bath is poured back into its bottle, and the bulk made up to the "contents mark" by the addition of No. 3 solution.

The object of the addition of the potassium iodide is to form silver iodide. A solution of silver nitrate will dissolve a certain amount of iodide of silver, the quantity depending mainly upon the degree of concentration of the silver nitrate solution. If a collodionised plate be sensitised in a plain solution of silver nitrate it will be found difficult to avoid the formation of "pinholes," owing to the solvent action of the silver nitrate. To avoid this it is usual to saturate the bath with silver iodide, which is done in the way indicated. This method, though not the only one used, is, in the writer's opinion, the most convenient and reliable.

Erratum.—Page 281, for "One stoppered 1½ Winchester," read "One stoppered Winchester, two 30 oz. clear-glass stoppered bottles."

Holborn.—On 3rd inst., Mr. J. F. Stevens in the chair, the representatives of the Autotype Company ably demonstrated the simplicity of the working of the carbon process.

West Surrey.—Mr. S. H. Fry, of the Paget Prize Plate Company, gave a very interesting lecture on "Lantern-Slides," concluding with a demonstration of the "Toning of the New Printing-out Plate." In his opening remarks he laid stress on the necessity in a good lantern slide for a *stained* rather than a *granular* image, and also great translucency of the shadows. Both these merits he claimed for the printing-out plate, and the specimens shown fully carried out the contention.

* Wipe the funnel out with a piece of spare bibulous paper, and place this, together with the piece of cotton wool, in a small box kept for residues. All paper, cloth, etc., which have been wetted with silver solution should be placed in this residue box.

Splashes of Ink.

By Penfeather.

A most interesting feature of novelty in photography is the demonstration of the fact that gelatino-chloride paper, in addition to its capabilities for being printed-out, is amenable to development. There is sufficient evidence before us to show that the new method of using this paper constitutes a process of practical utility, and that its results are equal in every respect and similar in appearance to printed-out proofs. We have been lectured sufficiently on the want of artistic perception displayed in using glossy-surfaced papers at all, but there do not seem to be signs that their employment will be abandoned for ordinary work, and facilities in using such will certainly not tend towards their banishment.

The new process comes at a most opportune season of the year, when daylight is poor in quality and short in duration. In many studios its advent will be welcomed, provided that it can be worked as well on a commercial as on an experimental scale, and there is no reason to believe that it cannot. The amateur who has to entrust his printing to his relatives or friends, while he is away at his business, will also find in it a valuable ally. Most of us know what it is to depend upon others to print to just the right depth; how seldom we get what we want, and how many pieces of paper find their way to the residues through insufficient or over-printing. Now all that will be required will be to remove the paper from the frame at any time after there is a decided impression and before the full depth is reached, for it is a peculiarity of the process that, within certain limits, the exposure the print has received is immaterial. It is recommended, however, that not less than one-tenth of that necessary to print fully out be given. There is, however, one precaution which obviously must be observed, and that is, that the paper must only be exposed to very subdued light in filling the frames or in examination during the progress of printing. With the exception of a preliminary bath of a solution of bromide of potassium, the development is similar to that of a gelatine plate or film, a suitable developer being, of course, employed. The print is subsequently toned and fixed in the usual manner. Full details of the process have already been published in the pages of the Amateur Photographer, and, no doubt, during the coming winter months many readers will become qualified to decide as to its merits.

Mr. W. E. Debenham's reputation for eccentricity will not suffer in consequence of the explanation he has given of his reason for not signing the roll of the judges consenting to act only at those exhibitions held under the conditions agreed to at the recent "Conference of Judges;" or on account of the curious example he gives in support of his views. He tells us that the assembled judges were not unanimous on all points. It would be singular if they had been, considering the wide scope of the subject under discussion; but most of them, like sensible men, were content to abide by the decision of the majority, and did not, like Mr. Debenham, hold aloof simply because they could not have entirely their own way. However, Mr. Debenham has his reward. He has had the judging to himself in one or two classes at the Hackney exhibition, and has made the best of an opportunity for publishing the fact, an advertisement that will, doubtless, bring him many chances of appearing again in a role which his idiosyncracies obviously unfit him for, but which he is evidently ambitious to play.

Noakes and Sons are giving lantern shows at the Crystal Palace. If any one wishes to receive a lesson in operating, on application to them they will be enabled to go into the Lantern Gallery free of cost.

Hull.—A special meeting was held to receive a demonstration and lecture upon "Paget Lantern Plates," the *piece de resistance* being printing-out slides and development of same. In the course of his remarks, Mr. Fry stated the characteristic qualities of lantern plates to be: (1) The stain like character of image; (2) translucency of the shadows; (3) the power of giving brilliant density and clear glass shadows if required. The printing-out plates of the Paget Co. give an image without perceptible grain, and the shadows do not block up. In this they are fully equal to the best collodion, but they are not suitable for reduction in the camera. With partial printing and development the result can be modified in the direction of greater contrast by a preliminary bath of five per cent. (of each) solution of carbonate and bromide of ammonium in place of the ten per cent. bromide bath, as given in the Paget Co.'s instructions. Less contrast can be obtained by using a dilute developer, or less of the actual reducing agent in the developer. Mr. Fry passed through the lantern some examples of the process, and also an interesting set of slides, all from one negative, and illustrating the range of colours from black through browns and reds to yellows, which are possible with the Paget lantern plates.

How to Photograph the Moon.

BY T. PERKINS, F.R.A.S.

A REFLECTING telescope possesses one great advantage over a refractor for lunar photography, namely, the absolute coincidence of the visual and actinic foci; for since the image is formed by reflection, not by refraction, there is no chromatic aberration.

The size of the image produced depends simply on the focal length of the mirror, not on its diameter, and the following formula will give approximately the diameter of the image in inches; approximately, I say, for since the moon is not always at the same distance from the earth, its apparent size must vary at different times:—

$$\text{Apparent diameter} = \frac{2 \times 22 \times \text{focal length of the mirror in inches}}{7 \times 2 \times 360}$$

$$= \frac{11 \times \text{focal length}}{7 \times 180}$$

so that if the focal length in inches is multiplied by 11 and divided by 1,260, we shall get the diameter in inches.

Thus, if the focal length of the mirror be 7 ft., the diameter of the photograph of the moon will be $\frac{11}{15}$ in. or about $\frac{3}{4}$ in.

This calculation is based on the fact that the moon subtends an angle of above half a degree.

The easiest method of photographing the moon is to remove the eye-piece and fit to a brass tube similar to that carrying the eye-piece, a board grooved in the manner of the reversing back of a camera, in which a focussing screen or a dark slide can be placed at will. A quarter-plate slide is the best size to use, and on it can be made two exposures if the back is pushed only part way along the grooves, and the slide only half opened for the first exposure. If the telescope is furnished with a driving clock the work of focussing and exposing is easy; if, however, it is not, the following is all that is necessary in the *modus operandi*.

First, focus; second, turn the telescope so that the moon is just coming on to the field; third, note by a watch how long it takes to reach the centre of the field; fourth, turn the telescope once more so that the moon is just coming on to the field, noting the time; fifth, close the mouth of the telescope tube with a cap or sheet of card or wood; sixth, insert the dark-back and draw the slide; seventh, wait till the watch shows that the moon will have reached the centre of the field again, then make the exposure, which will be a very short one, cap on and off with an ordinary plate will probably be sufficient. The nearer the full the moon is the shorter must be the exposure. Perhaps at full moon it may be necessary to decrease the light by cutting off the marginal rays by a stop. If the telescope is a good one the negative may be enlarged several diameters.

The well-known photograph of the moon taken by Mr. Common, a copy of which is framed and hung in the meeting-room of the Royal Astronomical Society, is an enlargement, if I remember rightly, measuring about a foot in diameter, from a negative taken at the principal focus of his 3 ft. reflector, which represented the moon's diameter as about 2 in.

Photographs taken in the way indicated show the general features and chief markings of the moon, and will do admirably for the production of lantern slides. If, however, it is desired to photograph minute features on a large scale a special eye piece properly corrected for photographic work must be used, a much longer exposure will be needed, and a driving clock keeping lunar rate is indispensable.

In the report of the Croydon Microscopical Club last week, there was a slight error. The mounts were shown by Hannam and Co., of 23, Soho Square, W.; not Adams and Co., as stated.

Birmingham.—Ordinary meeting on 31st ult., Mr. J. J. Button in the chair. Mr. Middleton gave a lecture entitled "The Bye-ways of Warwickshire," and described a great many of the less known places of the county, giving many valuable hints. Mr. Middleton strongly urged those present to adopt a definite object in their work. Thus would they add greatly to their own interest, and also be the means of obtaining valuable records.

Brighton.—The ordinary meeting was held on 3rd inst., and was devoted to the lantern. The No. 2 set of "The National Lantern-Slide Competition" were exhibited; also a selection of slides, the work of members.

Croydon (Camera Club).—On 1st inst., "Harmonising Harsh Negatives," a paper by Mr. Macintosh, was read. Questions and answers elicited. (1) Welford's rapid toning baths did not always yield satisfactory results: (2) Quite as quick and even toning could be effected by using an ordinary bath. (3) The surest safeguard against blisters is immersion of print in methylated spirits.

Apparatus.

HOUGHTON'S FOLDING TRIPOD STAND.

GEO. HOUGHTON AND SON, of 89, High Holborn, have introduced a new folding stand, as shown in the accompanying figure. The lower leg slides up, and the whole shuts up into a very small compass, and looks like a stout walking stick. The head is of a special form, so constructed as to fold up with the legs. The whole forms a very convenient and light stand, which will be especially suitable for hand and small cameras.



BURROUGHS AND WELLCOME'S "TABLOIDS."

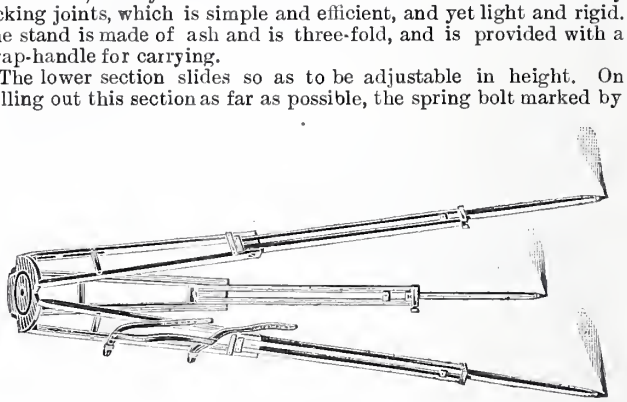
Messrs. Burroughs, Wellcome, and Co., of Snow Hill Buildings, E.C., have added two new photographic tabloids to their list, the one eikonogen and quinol, a combination of developers which is well known for the delicate results it will give, and in our hands the negatives obtained by the use of these tabloids leave nothing to be desired. The price of these is 15 for 6d., or 1s. for 40.

The other tabloid contains gold for toning, and one of these dissolved in $3\frac{1}{2}$ oz. of water gives a good toning bath, which will give tones ranging from brown to purple. So much difficulty is experienced in making good toning baths that these should find many friends. Price, 1s. per tube of three.

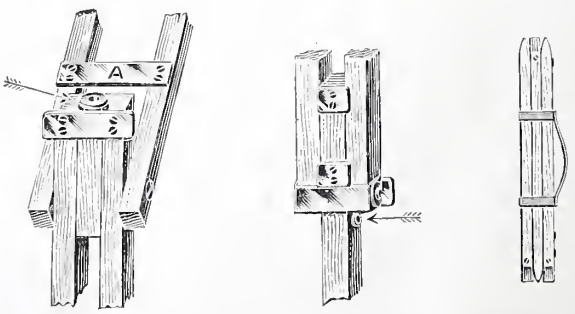
THE THORNTON-PICKARD AUTOMATIC CAMERA STAND.

The Thornton-Pickard Manufacturing Company, of Altrincham, Manchester, have just introduced a new stand with automatically locking joints, which is simple and efficient, and yet light and rigid. The stand is made of ash and is three-fold, and is provided with a strap-handle for carrying.

The lower section slides so as to be adjustable in height. On pulling out this section as far as possible, the spring bolt marked by



the arrow in the engraving springs out and instantly locks the joint. To close again, the spring bolt is pressed with the thumb, which allows it to slide back again. A thumbscrew is provided at this joint, so that the section may be adjusted to any height, as above-



mentioned, and may be used in addition to the spring bolt to give extra rigidity if desired.

The upper joint is locked on exactly the same principle, but it folds instead of slides; the spring bolt is larger and stronger, and

snaps into position as soon as the upper section is unfolded. The two sections are therefore wedged together in a very practical manner and the utmost rigidity is secured.

This new stand is well made, and a good practical instrument. Priee up to whole-plate, 17s. 6d.; up to 12 by 10, 22s. 6d.

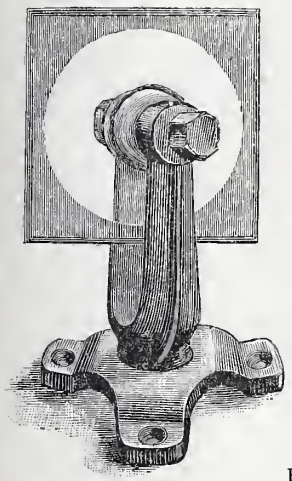
CHRISTMAS AND NEW YEAR MOUNTS.

We are irresistibly reminded of the approach of another year by tbe receipt of samples of the above.

Percy Lund and Co., Memorial Hall, E.C. This firm are issuing some very neat and dainty designs, suitable for all kinds of prints, both with cut-out centres and also with the special cut corners, which do away with any mounting. Others are blocked in silver and gold, and with neat and appropriate designs and mottoes will enable many to utilise tbeir productions instead of buying cards.

Hannam and Co., of 25, Soho Square, W., also send us a packet of assorted samples of various kinds, some with faint tinted margins and white line and centre, others on tbe pattern of their well-known cut-out mounts for chloride prints, but the most striking is one with a bird's-eye maple wood surface, with a toned grey mount in the centre. This is arranged to stand upright, and the effect is decidedly good and pleasing.

The Kensington Art Albums of this firm, specially designed for chloride prints, are particularly worth seeing, and one filled would form a handsome present to anyone.



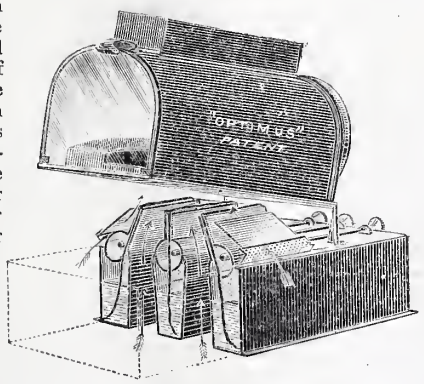
THE BLACKFRIARS LANTERN CLAMP.

The Blackfriars Photographic and Sensitising Company have sent us a sample of this useful little lanternist's requisite. It can be screwed down to a board or table, and the lantern slide placed between the felt covered holders, which can then be screwed up tight and the slide bound.

It is a useful labour and time saving appliance, and at the absurdly low price of one shilling should form part of the impedimenta of every lantern-slide maker.

THE OPTIMUS 1893-4 OIL LAMP FOR LANTERNS.

Perken, Son, and Rayment, of 99, Hatton Garden, have just introduced a great improvement in oil lamps, which will be warmly welcomed by all who use this form of illuminant. From the diagram it will be seen that central as well as side air shafts are provided, and with the greater supply of air is combined greater illumination and greater freedom from smell. We have had an optunity of severely testing this lamp against some of the best ordinary forms, and the increase in illumination is at least three times. The perfect combustion and good ventilation, whilst keeping the lantern cool, also keeps the oil reservoir cool, and the whiteness of the light is so much increased that this should be useful for enlarging.



The Exhibition of the Photographic Society of Great Britain will close on Wednesday, November 15th. Ordinary meeting, Tuesday, November 14th, at the Gallery, 5A, Pall Mall East: "Photography in Coal Mines," by Herbert W. Hughes, F.G.S., A.R.S.M.; "On the Range of Light Impinging on a Plate during Exposure in the Camera," by Professor W. K. Burton, C.E.

Richmond.—The second ladies' night of the season took place on 16th ult., when the President described "A Trip to Spain with the Camera," which he illustrated with a series of slides, depicting scenes in Valencia, Cordova, Madrid, Toledo, and Seville.

Societies' Meetings.

Arbroath.—The annual meeting was held on 31st ult., Mr. G. G. Dalgarno, the President, in the chair. Office-bearers were elected as follows:—President, Mr. G. G. Dalgarno; Vice-President, Mr. Robert Moodie; Treasurer, Mr. George Reid; Secretary, Mr. James Hood; and the following Committee:—Messrs. M'Leish, Whyte, Young, Robertson, and Davidson.

Great Yarmouth (Camera Club).—The annual meeting was held on 20th ult., to elect President and officers for the ensuing year. The Secretary moved a resolution, of which he had given notice, that the financial year should end on the 31st December instead of 30th September, as at present. This proposition being carried, it was resolved that the present officers continue to hold office until the meeting in January. The balance-sheet was then presented and passed, and the President expressed a hope that a few more workers would join the club, and bring the number up to the full strength. During the summer several pleasant outings had been held, and the work of the members seemed to be making steady progress. The circulating portfolio had greatly assisted in stimulating the members to do good work, and he was pleased to find that Mr. Price, who had always been most kind in helping the members, had won the silver medal, which he well deserved. The Secretary exhibited the Ilford exposure meter, which had been kindly lent by the Britannia Works Co. The Secretary also exhibited an enlarging and reducing camera, which he had constructed from his own design, and which enables the operator to obtain the necessary movements quickly and easily. Enlargements can be made from quarter-plates to 10 by 8 plates, and lantern slides reduced from 10 by 8, and any negative under that size. A discussion then took place upon the subject of a lantern for the Society, as the one which had been used was no longer available. The President thought that the funds would hardly permit of a lantern being purchased by the club, and they had better hire one each time they required it. The Secretary said, if they liked, he would himself purchase a first-rate lantern, and they might have the use of it by paying 2s. 6d. per night and the cost of the gas. This offer was accepted, and arrangements were made for the exhibition of the various prize slides, which are to be lent, and others, during the coming season.

Hackney.—On 31st ult., Mr. W. L. Barker in the chair. Members' work was shown by Mr. Hensler, viz., views taken upon the Rocket and Cadett lightning plates. Owing to the wide range in subjects treated, a decided opinion was unobtained as to which plates yielded the best results with an equal exposure. The Hon. Secretary showed the Thornton-Pickard automatic camera stand, which has many advantages, viz., automatic locking joints, lightness and compactness consistent with rapidity. Mr. Fry, of the Paget Prize Plate Company, then gave a demonstration upon the new rapid printing-out paper by partial development. Amongst its advantages may be claimed that prints only require partially printing, the rest being developed up to the necessary strength and detail; they are then toned and fixed in the usual manner. To briefly describe the process, it consists of taking the partially printed print and immersing without washing in a solution of potas. bromide, 1 oz., and water, 10 oz., leaving two minutes or more; it is then washed in water for about five minutes, and then developed with hydrokinone, according to formula given by the Company. It should then be washed for five minutes and toned with the following combined bath:—Make a stock solution, 80 oz. of water, 1 lb. hypo, 1 oz. acetate of lead, and about 1 oz. chalk, then take 5 oz. of this solution, after well shaking, and add 1 to 1½ gr. of gold, which will be sufficient to tone one sheet of paper. The prints tone rapidly and give a large variety of tones, according to the taste of the operator. The prints are then washed for a couple of hours in running water. The demonstrator recommended not to carry the prints too far in development, as they gained in density in toning. The paper, although very sensitive to daylight, may be manipulated with a very fair amount of gaslight without having any effect upon the finished print.

Kilmarnock.—A meeting was held on 27th ult. Mr. Thomas Ferguson was re-elected President, and promised to give a demonstration on "Lantern Slide Making," at next meeting, 15th inst. Vice-President, Mr. David Boyd Kilmaurs; members of Council, Messrs. George Paxton, James Thomson, and David Craig; Treasurer, James S. Bain; Secretary, William Paterson, teacher, 50, St. Andrew's Street.

Leeds (Y.M.C.A.).—A meeting was held on 3rd inst., when Mr. C. C. Vevers gave a very instructive lecture on "Photographic Dodges." Amongst the many processes described and demonstrated by the lecturer were intensification, reduction, double printing, film stripping, etc.

SOCIETIES' FIXTURES.

Nov. 9.—TOOTING CAMERA CLUB—"The Sandell Plate," Mr. Fry.
,, 9.—LOUGHBOROUGH—"Stereoscopic Work," Paper by Mr. H. Wood.
,, 9.—LIVERPOOL—AMATEUR PHOTOGRAPHER Annual Lantern Slides.
,, 9.—HULL—AMATEUR PHOTOGRAPHER Prize Slides.
,, 9.—LEEDS—Lantern Lecture, "Old and New Flanders," Dr. Thresh.
,, 9.—DUNDEE AND E. SCOTLAND—"A Few Remarks on Hand-Camera Work and Hand-Cameras," by J. K. Tullock.
,, 10.—LEWISHAM CAMERA CLUB—"Common Defects in Negatives," "Our Club Excursions, with Lantern Slides."
,, 10.—HOLBORN—Social Evening.
,, 11.—LEYTONSTONE CAMERA CLUB—Open Social Evening.
,, 13.—DURHAM CITY—"Hauff's Developers, etc.," by H. E. Morgan.
,, 13.—N. MIDDLESEX—"Some Practical Aspects of Art Photography." Mr. A. Horsley Hinton.
,, 13.—THE LANTERN SOCIETY—Annual Meeting. American Slides.
,, 13.—GOLDSMITHS' INSTITUTE—"Paget Printing-out Opals," Mr. W. S. H. Fry.
,, 13.—RICHMOND—Smoking Concert.
,, 14.— "Bromide Printing," David B. Jack.
,, 14.—SHROPSHIRE—AMATEUR PHOTOGRAPHER Prize Slides.
Nov. 14.—HACKNEY—"Clouds in Lantern Slides," Spencer H. Barton.
,, 14.—W. LONDON—"Figure in Landscape," Mr. J. C. Dollman.
,, 15.—CROYDON CAMERA CLUB—Special Lantern Display.
,, 15.—LIVERPOOL—Lantern Lecture, "Life in Tripoli," Mr. G. E. Thompson.
,, 15.—PHOTOGRAPHIC CLUB—"The Upper Alps," Illustrated by Lantern Slides, Capt. W. de W. Abney, F.R.S., etc.
,, 15.—ASHTON-UNDER-LYNE—Exhibition of Cameras.
,, 16.—PAISLEY—South African Lantern Slides.
,, 16.—WOODFORD—"What Form should the Work of a Photographic Society take in order to be of the greatest Assistance to its Younger Members?"
,, 16.—ASTON—"With Hand and Stand in North Wales," Hill Norris, M.D.
,, 16.—LIVERPOOL.—Lecture, "Hand-Camera Work," with special reference to the Frena System, by F. O. Bynoe.
,, 16.—HULL—Amidol Demonstration, Messrs. Fuerst.
,, 16.—BRADFORD—Exhibition of Members' Work.
,, 17.—LEWISHAM CAMERA CLUB—Exhibition of Members' Work.
,, 17.—HOLBORN—W. E. Debenham will Lecture and Demonstrate on "Wet Collodion."
,, 17.—LEEDS (Y.M.C.A.)—"Lantern Slide Making," Mr. Godfrey Bingley.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

ANSWERS.

6170. **Developer.**—A strong velvet tone seems rather a paradox, velvet tones usually being soft. Hydroquinone is rather inclined to give harsh prints; however, the following formula gives softer prints than many, viz.—

I.

Hydroquinone	120 gr.
Soda sulphite	480 ,,
Bromide potassium	6 ,,
Water dist.	10 oz.

II.

Sulphite soda	240 gr.
Sat. sol of washing soda	5 oz.
Water dist.	5 ,,

The exposure must be found by trial, but with slow bromide paper, using a fairly dense negative, say 20 to 60 seconds at 1 ft. from a No. 5 Bray burner. In developing, first pour a quantity of No. 1 into the dish and soak print in it for about one minute, then pour it back into the bottle and flow over the accelerator, or if doing several prints it is more convenient to have two dishes and transfer from one to the other. Note that the temperature of the developer should not be below 60° F. Unless negatives are suitable it is rather difficult to obtain soft results, if negatives are harsh, amidol or eikonogen would give more pleasing results. —J. W. S.

6171. **French Polish.**—Dissolve 4 oz. of shellac and ½ oz. gum benzoin in one pint methylated spirit. This may be assisted in dissolving, by placing the bottle in hot water, but on no account must it be placed near the fire. The best method of applying the polish is to soak a piece of cotton wool with it and then enclose the saturated cotton-wool in a piece of an old handkerchief or linen.—FRETWORKER.

6171. **French Polish.**—"Enquirer" will find the following a good recipe for French polish—

Shellac	3 oz.
Mastic	2 dram.
Gum benzoin	4 ,,
Meth. spirit	1 pint

The rubber should be of wadding covered with thin cotton, and should be occasionally touched with linseed oil.—W. PITCAIRN CRAIG.

QUERIES UNANSWERED

Aug. 25.—No. 6155.
Sept. 1.—Nos. 6158, 6159, 6160.
,, 22.—No. 6161.
,, 29.—No. 6162.
Oct. 6.—No. 6163,
,, 13.—No. 6164.
,, 27.—Nos. 6168, 6169.

EDITORIAL.

F. W. POPE.—(1) Is, of coarse, spoilt by the two candles. (2) Under-exposed. (3) The candles were too low; they should have been placed at least a foot above the sitter's head. (4) Much better, although it is under-printed and under-toned. You will find it very difficult to get good results by using two candles. It wants at least two paraffin lamps to get anything like reasonable exposure and lighting.

R. R. LEVINGSTON.—Much obliged for the two prints. The snap-shot is a little too black in the foreground, but a lovely bit could be made of it. As to the second print, are you going to let us into the secret? Are they marks of the lightning-bug?

G. A. SAVAGE has some large papier maché dishes the corners of which are coming undone; how can they be repaired? The simplest way would possibly be to have some wood corners made just large enough to fit outside, bore screw holes through the papier mache and run screws through into the wood, counter sink them, and give them a good coating of varnish. At best we are afraid it will be but a makeshift job, as papier mache once started is extremely difficult to protect from water.

PERPLEXED asks whether there is any simple means of freeing prints from hypo without having to wash for more than about thirty minutes. In our issue for August 11, p. 96, there is a paper by Grundy and Haddon which proves that ten minutes' thorough washing is enough to take out all the hypo that is possible from albumen prints, and probably this applies to bromide prints also, but a little longer would be perhaps required for gelatino-chloride, for there is a thicker film of gelatine. Can enlarging be done with a 30s. magic lantern? Yes, provided the negatives are under 4 in. diagonal and no light escapes into the room so as to fog the bromide paper, otherwise the lantern can only be used as a source of light by placing some little distance from the negative, which must be placed in a hole cut in the wall of a dark-room or box. Sepiatype paper is an iron printing-out process, we believe. The paper is printed in a frame in the usual way; after printing, soak in clean water till the print is thoroughly satirated and soft, for about ten minutes or quarter of an hour, place in fresh water for five minutes, then into a bath composed of saturated solution of hypo ½ oz., water ½ pint In this the tone of the print alters; it gets clear, and the whites become pure. If the action is too strong or too long the intensity suffers; the slightest sign of this must be stopped by removal and thorough washing—then dry.

MUDDLE has been using the American standard developer with a nitric-acid pyro solution, and finds it turns very thick and muddy, and the plates are all fogged. He exposed a plate at 2 p.m., *f*/16, light dull and hazy, for 7 sec. This fogged so as to show only the high lights. Of course, the plate was fearfully over-exposed. (1) Is the pyro made up correctly for the accelerator? No; it is necessary to use sulphite or metabisulphite. (2) Would metabisulphite be better for this accelerator? Yes; use 1 oz. of pyro and 1 oz. of metabisulphite. (3) Is potassium bromide the proper restrainer for this accelerator? Yes. (4) Give general formula for developer for half-plate:

Pyro	4 gr.
Bromide	1 ,,
Accelerator	½ oz.
Water	1½ ,,

(5) Is it a suitable developer for Iso-plates? Yes. (6) Does it stain the hands or plates? It will not stain either hands or plates if properly used, but with prolonged development or careless use both must be stained. (7) In mounting P.O.P. the squeegee scratches paper; should I use glazed paper over film, or how should I do it? The best thing is to use a piece of stout paper which has been waxed.

NERO.—(1) Negative somewhat hard; the blouse too white and wanting in detail. (2) Had you gone a little further back so as to have taken in more of the tree on the left it would have been better. There is also a curious fogginess in the centre. (3) Negative too hard; the road now looks like snow. (4) We should have cut off a little bit of the foreground, just up to the rushes, and also the figure. (5) We should cut the man and foreground right out. It rather gives one the impression that the camera was not quite straight. The lines are rather inclined to run back. (6) Good. (7) Portraits in the sun are proverbially hard to successfully manipulate, but you have done as well as could be expected. (8) This is a case in which a little naturalistic focussing would have been not only permissible but advisable. You evidently intended to represent a path through a field, but now the trees at the end are in the same plane as the front ones. You used too small a stop; middle distance is too sharp and clear. (9) Good. (10) Ditto. (11) Printed too deep, and insufficiently toned. (12) We should have liked to have seen the other end of the bridge, and you might have taken it the other way of plate. You could have made a good thing out of this had the old gentleman been walking across, and the two young people doing a quiet, hastily snatched—well, "spoon"—behind his back. (3) Over-printed badly. What is the dark mark on left hand, and why did you not break the road up somehow on the left?

G. A. S. asks if we have had an article on an apparatus for exhibiting solid things by means of a lantern. Yes. This is an Aphengescope, and was described on p. 32, Jan. 13th, 1893.

RIATSALA.—We gave a formula for Metol last week which was accidentally printed or written wrong. It should be—

A.

Metol	5 gr.
Sodium sulphite	50 ,,
Potassium bromide	1 ,,
Water	1 oz.

B.

Carbonate of potash	10 gr.
Water	1 oz.

Mix in equal parts.

C. BRIGGS.—(1) Negative too thin, considerably over-toned, and a big waste of paper in the foreground. (2) Cut half an inch off foreground, very much over-toned, and a hideous pink tinge. (3) Is a charming bit spoilt by over-toning and the pinkness. (4) Good, although we should have liked to have seen the distance a little fainter, and the print free from brown stains. (5) Insufficiently toned, but a pretty little girl. (6) Over-exposed, and too flat and grey.

WENFORDIAN asks for a good solution to remove a print from its mount, as the latter is bruised and broken. The best thing to do is to trim the mount down to the size of the print, lay face downwards on clean paper, and then soak sheets of blotting paper cut to size on the mount till by raising a thin strip with a penknife at one corner it can be stripped off. By repeating this it will be possible to strip the different layers of card off till only a very thin one is left, and this can be mounted again without trouble.

J. H. has a small magic-lantern with long coloured slides, and wants to know where to get them. These are coloured litho slides, and can be obtained from Theobald and Co., Farringdon Road, Noakes, of Greenwich, and probably several other firms whose names we do not know. They are merely soaked in water, squeegeed to a strip of glass, and the paper backing removed. (2) This correspondent is making a hand-camera, and wants to know what sort of a lens should be used. Can a spectacle lens be used? If so, what sort? The best lens would be a rapid rectilinear, and these can be obtained very cheap now. For instance, Vevers, of 12, Market Street, Leeds, sells one at 8s. 6d. Spectacle lenses can be used, and periscopic or meniscus lenses of about 5 in. focus are the best, but these will only work at a comparatively small aperture, about *f*/16, and correction has to be made for the non-coincidence of visual and chemical foci, which is a nuisance unless a fixed focus is made. (3) Please show me how to make the plate changing We regret that we cannot spare the space. Some articles on the construction of a hand-camera appeared in our issues of Sept. 16th and 23rd, 1892, to which we must refer our reader.

F. J. CLARKE.—We hope to print paper next week. We will write you by post.

GEORGIUS asks whether a triple condenser is worth the extra cost. Yes, we think so. There is a great gain in light. Of the two objectives we prefer O. The H are good, but nothing extraordinary. Get an O. (1) Negative too thin; wants intensifying. (2) Ditto. (3) Ditto. (4) Would have been better to have included the whole of the bridge; under-toned. (4) Negative too harsh, under-exposed. Paint over the back of negative to the left of font. (6) Negative thin; wants slight intensification, and print much over-toned.

GEO. W. JONES writes again about a fixed focus for a 5½ in. lens, as we misunderstood his letter last week. He asks now, what distance from plate should lens be fixed to give 16ft. sharp? Our correspondent might have answered his own query from the data given last week. If the lens is placed at 5½ in. from ground-glass, measuring from stop, all objects beyond 16 ft. will be in focus. To make a scale for the various distances for focussing is not difficult, and can be done with the following formula:—

Let D = distance of object.
f = equivalent focus.

Then as D : *f* :: *f* : *x*, all measurements in inches. Ex.: Lens 5½ in. focus, object 12 ft. distant.

$$144 : 5\tfrac{1}{2} :: 5\tfrac{1}{2} : x.$$

$$\text{Or, } x = \frac{121}{576}$$

From your sketch we take shutter to be a rebounding; if so, do not use it, but make it travel across lens. You will get shorter exposures and less chance of vibration.

WM. BOOTH.—We must look your slides up.

J. B. JONES wants a formula for bromide paper enlargements (in a camera) with eikonogen and hydroquinone. We do not quite understand whether this querist wishes his enlargements to develop as they are exposed or not. A good formula for bromide paper is Chapman's eiko-sum-hydro:

A.

Hydroquinone	40 gr.
Eikonogen	120 ,,
Sodium sulphite	480 ,,
Citric acid	20 ,,
Distilled water, to	20 oz.

B.

Potassium bromide	5 gr.
Sodium carbonate (crystal)	60 ,,
,, hydrate	30 ,,
Distilled water, to	20 oz.

For use mix in equal parts. (No. 1) Too muddly. One can hardly distinguish what all the upper part is, and it is slightly under-printed. (2) Too much sky and not enough foreground, and whites yellow. (3) Shadow side of face lost in the chair; paint over the back of the negative with yellow matt varnish on this side. Negatives slightly under-exposed; a bad tint all over print. (4) The head is raised up a little too much, otherwise it is a good pose and well exposed.

A. J. TYRER asks (1) Is there any method of painting photos. in water-colours on albumenised or P.O.P. paper? Ordinary albumenised paper prints may be successfully coloured with water-colours if treated first with a solution of ox gall—

Purified ox-gall	1 drachm
Alcohol	4 oz.
Distilled water	16 ,,

Dissolve and filter. The ox-gall can be had from any chemist. Saturate a small pad of flannel or cotton wool with the solution, and rub all over the print, then allow to dry, and paint. If the paint runs into streaks dilute with some ox gall and use, and allow one coat to dry before putting on another, to get depth of colour. P.O.P. prints are more difficult to paint, because the gelatine is so absorbent, but the prints should be treated with chrome alum, dried, and then painted. (2) Is there any method of taking portraits in an ordinary room with moderate exposure in a room facing north with a large window, with ordinary winter light? Lens is an R.R., working at *f*/16. Ilford red-label plates have been used up to the present without good results. *F*/16 is a very small aperture for an R.R. to work at, and it is too small for portraiture in doors. The only thing to do is to use a magnesium lamp, or else get a lens working at a larger aperture. It is not the fault of the plates, but probably too short exposures, that has resulted in the poor results. (3) A rather valuable negative has got marked with purple stains from a damp piece of paper. Can they be removed? These are silver stains due to absorption of the free silver from the paper. The usual remedy is to treat the plate with a weak solution, about 10 grains to the ounce, of cyanide of potash, but this has a tendency to destroy the image as well. It is very possible that a fairly strong solution of thiosinamin acidulated with nitric or hydrochloric acid, would remove these stains entirely without any action on the image. We have wanted to try this, but have had no time. (4) Where can materials for carbon printing be obtained? Elliott and Son, Photographic Works, Barnet, Herts, will supply all materials, and a capital little brochure on how to work the process, the latter free.

H. WATSON.—(1) Over-printed. You have lost all idea of sunshine. It would have been better to have used a larger stop so as to have got the cottage in the distance. A little fuzzy and not so distinct. (1A) Over-printed. Are you printing in the sun or is the negative thin? (2) Negative a little hard and slightly over-printed. (3) Under-exposed. Bits of trees in the foreground offensive, and we should have liked to have seen a bit of sky. Water too white. (4) Figure unnecessary; slightly under-exposed and over-toned. (5) Very fair. (6) Over-printed; no whites in it. Printed properly on rough paper this would be a very good thing. (7) Cut the print off on the right-hand side to the house. Negative weak, we should think, and over-toned (8) Over-toned, and water too white. (9) Figure should have been looking at flower. (10) Over-printed. (11) Over-printed, otherwise good. (12) Bad; head all on one side and the background too light for figure. Your main fault is either over-exposure and consequently thin negatives, or else printing in too strong a light. Toning is nice and even throughout.

G. J. D. has obtained some metol cartridges, and cannot understand how to use them. He has always understood that metol could be used in two solutions. Metol may be used in two solutions. Metol cartridges, however, contain metol, sulphite, and an alkali; consequently, when dissolved they form a one-solution developer. The best way of using these cartridges is, we think, as follows:—Break the cartridge, dissolve the contents in 3½ oz. of water. For normal exposure take 1 part of this stock solution and dilute with 6½ parts of water; for over-exposure dilute with 10 parts of water, and add a few drops of 10 per cent. solution of citric acid and 20 drops of 10 per cent. solution of bromide to every ounce of developer. For under-exposure or for instantaneous work begin development with the 1 : 6½ developer, and as soon as development has proceeded as far as it will, pour off and apply the stock solution without dilution. It is preferable, we think, to buy the metol itself and then make one's own solutions.

E. P. VULLIAMY has a negative reversed, that is, taken through the glass. The only thing to do is to strip the film. The best plan is as follows:—Clean most carefully the backs and edges of the plate; this is important. Place the plate on a levelling stand or else level it by means of wedges under each side. Now get some enamel collodion, made by dissolving pyroxylin 7 gr. in alcohol ½ oz. and ether ½ oz., and add castor oil 2 drops. Pour a good size pool of this on to the centre of the negative, and allow it to find its way to the edges. As much collodion as possible should be put on without its running off the edges. Allow the collodion to set thoroughly, which will take about an hour. Place the negative in water, and rock the dish till the water runs easily and evenly over the surface. Make a solution of hydrofluoric acid 1 oz., water 20 oz., and place the negative in it till the corners of the film can be lifted up with a soft camel's-hair brush. Wash carefully under the tap for a few seconds. Place the plate film downwards on a dish of clean water, and detach the film from the glass by careful manipulation with a soft camel's-hair brush and leave it floating in the water. Slide a piece of glass or celluloid (a size larger than the negative) which has been previously coated with gelatine solution—which should be made by dissolving 1 oz. of gelatine and 5 gr. of chrome alum in water 20 oz.—underneath the film so that the collodion is in contact with the gelatine, raise out of the water carefully, smooth out if necessary with a camel's-hair brush, lay over the negative a piece of tracing cloth, and squeegee gently so as to expel the water from between film and plate. Then immerse the plate in methylated spirit or alcohol for a few minutes, three to five, and set in a rack to dry.

A. J. WETHERED.—(1) Flat, and as an architectural study spoilt by cutting off the bottom of window. (2) Negative too hard, and spoilt by the patchy background; the hands and helmet are too white, and the face wants retouching. (3) This is very curious, the little spray of roses above the young lady's head is excessively funny. The pose is too stiff. (4) You might have gone a little further back and taken more of the tree; we should also like to see the house a little fainter, so as to give a little more idea of distance (5) Not sent. (6) Too hard in the foreground and wants clouds. (7) Technically good, has an inch too much foreground. (8) Printed in too strong a light. Cut an inch and a half off foreground and two inches off the sky. (9) Good. (10) We should cut an inch and half off foreground, an inch off right-hand, and two inches off sky. Technically good. (11) Cut an inch off foreground. (12) Very much over printed, either printed in too strong a light or negative wants intensifying. (13) Ditto. (14) Ditto. Abandon altogether printing in the sun, pay more attention to your foregrounds and sky, do not get such blank wastes. With regard to development, we should say, abandon what you are using and take to pyro and soda; get a chemist to make the following up for you.

No. 1.

Pyro	1 oz.
Sodium sulphite	4 ,,
Sulphurous acid	½ ,,
Distilled water to	9¼ ,,

No. 2.

Potassium carbonate	1 oz.
Potassium ferrocyanide	1 ,,
Sodium carbonate	1 ,,
Distilled water to	10 oz.

For use dilute 1 drachm of No. 1 with 2½ oz. of water and apply to the plate, then measure out 1 drachm of No. 2, pour the developer from dish into measure containing the No. 2 solution, reapply to the plate, and rock the dish for five minutes; if no image appears add another drachm of No. 2 in the same way, and make further additions if necessary, using, for all additions after the second, the addition of five drops of a 10 per cent. solution of potassium bromide. It is impossible to judge satisfactorily of negatives from prints. This correspondent asks whether prints on Pizzighelli's platinum printing-out paper prints are permanent. Yes, the image is in platinum and therefore permanent. Always pleased to help you.

H. HARVERY GEORGE asks, who is the maker of the Allendale lantern as shown at the Pall Mall Exhibition? S. Levi and Co., Farringdon Street, are the makers, but they do not supply any but the trade. Any dealer would or should be able to get one.

M.M. asks how over-printed proofs on albumenised or gelatino-chloride paper may be reduced. A very weak solution of cyanide of potassium may be used or Spiller's cupric chloride reducer—

A.

Water	1200
Alum	120
Copper sulphate	120
Salt	240

B.

A saturated solution of salt.

For use mix in equal parts. Soak the prints in this till sufficiently reduced, then wash and dry.

W. MITCHELL has had some gold in powder given him, and wants to know how to use it for toning. The first thing to do is to convert it into chloride. For this purpose mix two parts of hydrochloric acid with one part of nitric acid, and pour on the gold in a dish or test tube, and heat on a water bath or by placing in a vessel of hot water. This should be done outdoors so as to allow the fumes to escape. As soon as all action ceases, add more acids, but the main point is to use as little as possible, and continue heating till all the gold is dissolved and a clear solution obtained. We have now an acid solution of chloride of gold, and the only thing to do is to evaporate on a sand or water bath till all dry, dissolve in water and use. A better way is to weigh the gold first. Treat with the acids. When dissolved, heat till fumes are no longer given off, then dilute with distilled water till there is one grain of gold in every two drachms of solution. When required for use, measure out one drachm of solution for every sheet of paper, add chalk till some remains undissolved, and allow the effervescence to subside, then use this as the ordinary chloride of gold.

F. C. SIMPSON has been making some bromide enlargements, and has found that after giving a full exposure they developed up fairly, but once while still in the developer commenced to fade, and this continued in the clearing solution and fixing till the image has almost vanished. The developer, Eastman's ferrous oxalate. The paper had been carefully kept. Can this be accounted for? The only explanation which seems possible to us is that the developer had been either kept too long, or else was too acid, so that potassium ferric oxalate was formed after a short exposure to the air, and this affected the image. We should like to have fuller details as to development, age of developer, etc., and to see a print. (2) There are, of course, a very large number of portrait lenses in the market, but your best plan to get a good one cheap would be to get one through our "Sale and Exchange" column. A. C. d. v. Dallmeyer was offered last week for £3, and you can often pick up a Lerebours, Jamin, or Derogy at half this price.

J. V. G.—(1) The albums that are most used now are those which do not require any pasting of the prints, but in which the prints are only slipped in between. Hannam, Adams, Percy Lund, Fallowfield all sell them. (2) Try the smoother variety of mezzotype paper. See advertisement for address. Always pleased to help you.

AESCURINE.—We are very sorry, but hope that it will do you good. You must take it as you would a nauseous dose of medicine, and hate the doctor who prescribes it, but when it begins to do you good you will not regret it. What is a flare spot, and how to avoid it? A flare-spot is a circular patch of light seen on the centre of the focussing screen, and is caused by reflection from one or more of the surfaces of the lens, and is also due sometimes to a wrong position of the stop. It generally makes its appearance with landscape lenses, and may frequently be cured by unscrewing the lens a turn or two. If this will not do it, then send your lens back to the maker, and he would put it right. Give up using the developers, or else make them up yourself. We have given plenty of formulæ the last few weeks. We shall be glad to help you further in any possible way we can. If you like to send up some negatives we may be able to give you some hints.

ISAAC NEWTON asks by what process the blocks are produced, which we use to illustrate our paper, and whether they are printed separately, or at the same time as the letterpress, as they are so beautifully done. Although we take the compliment, and are obliged for it, yet we are conscious that as specimens of block printing they are not all that can be desired. The very finest method of block printing is by using a soft sized surface paper, and printing with a hand press. This is, of course, only applicable when small quantities are required. All our illustrations are printed in with the letterpress. The process of making the blocks is, roughly, as follows:—A print—preferably on gelatino-chloride paper—is copied by means of wet collodion, and before the sensitive surface is placed a sheet of plate-glass ruled with a diamond in lines about 125 to the inch these lines being blacked in with some black substance. If a one-line screen—that is, a screen ruled only one way—is used, it has to be reversed, so as to cross the lines when half the exposure is given. The negative is developed, fixed, washed and dried. A sheet of copper or zinc, the former being the best, is now coated with sensitive bitumen or asphalt, exposed under the cross-grain negative, developed with turpentine, and washed, and then etched with an acid, cleaned and mounted type high on a block of wood. This is locked up by the printers with the type surrounding it, and printed on a machine, not a rotary though. The great secret in block printing is to get good overlays. The block is nothing but a sheet of copper with small bits etched out of it. If this is pulled on a press in the ordinary way it looks flat and poor. The machine man, then, takes a pull, and sees that one part should print black; he cuts this out of his pull and pastes it under his blanket on his roller, so that it just comes in printing over the part that should be blacker. This means, of course, greater pressure there, and consequently more ink is taken up. It is sometimes necessary to make as many as sixty overlays for one block, and a man will work a whole day or two at this alone. A good machine man will get a good result out of a poor block, whilst a bad worker will get a poor result from a perfect block.

D. C.—The blackish streaks were, we should say, due to over-exposure. You cannot use a better developer than the one you use now.

W. THOMPSON.—(1) Much too weak and tone too warm (Class III). (2) Much too weak and thin (Class III). (3) Decidedly better; wants half an inch off foreground (Class II.) Your best plan would be to send six stamps, and we will send you down about twelve first-class slides to see what a good slide is like.

C. H. HUMPHREYS asks—(1) What is the cause of white and orange spots appearing on P.O.P. prints during the washing? These may be due either to metal coming in contact with the prints or to too long washing? A rapid washing—half an hour, we should say, at the most—in running water is sufficient. (2) What will give a silver-grey tone to P.OP.? Nothing, so far as we know, but if a sample of the tone is sent we may be able to hit it. (3) What is the cause of P.O.P. changing colour in fixing bath, however dilute, after toning to purple in the borax bath? Insufficient toning. This should be carried on till the prints on looking through it has lost all trace of red in the deep shadows. On fixing, the colour will go slightly, but return on drying. (4) What brand of plates do you consider to be the most rapid in the market? So much depends upon the light and other circumstances, such as colour, etc., that we are unable to answer this query. Very rapid plates are made by numerous firms, and are advertised in our columns. (5) Would an ordinary magic-lantern do for enlarging quarter-plate negatives? The diagonal of a quarter-plate is about 5 in., exclusive of rebate, therefore the condensers must be over 5 in. to take in all the negative. Then again the lantern must be light-tight, or else the paper must be in a camera. You might use the lantern to light your negative. Had you an enlarging camera or a dark-room to use for enlarging? Let us know, and we will answer you again. (6) Will Alpha do for enlargements? Yes, but it is rather slow. (7) The developer for the hot-bath platinotype is—

Oxalate of potash	1 oz.
Water, to	4 ,,

Heated to 110 F. For the cold-bath paper the same developer used cold. (8) Bromide paper can be toned with a strong sulphocyanide bath, and by chloroplatinic acid, but the results are not worth the trouble and expense. The little print you send is flat and poor, and has yellow-whites. What process is it by? Hope we shall often hear from you now.

E. BUCKLEY wants a good formula for a reliable retouching medium—

Gum dammar	10 gr.
Canada balsam	5 ,,
Turpentine	1 oz.

This is a good medium, but requires warming in front of the fire slightly to make thoroughly dry before retouching.

A. C NICHOLLS.—Certificate comes on this week, we hope.

PAUL GILLARD has, as suggested by Eder, "A. P.," October 20th, tried mixing dilute solutions of bromide and silver nitrate, and finds that although excess of silver nitrate was present, the precipitate was yellow and not white, and asks for an explanation. Information is not given as to whether the solutions were mixed in a red light or not, and beyond suggesting this we are unable to explain it. We will look the subject up and see what else we can find on it.

A. DUFFER has been touching up an unvarnished negatives with a stump and lead pencil rather too vigorously, and the prints show it up badly. Can it be removed by soaking negatives in methylated spirit? No, there is absolutely no solvent of solid carbon. The only thing we can suggest is to wet a pad of washleather with methylated spirit and try and rub the lead off. A good deal may be taken off this way sometimes. A negative should never be retouched in any way without previous varnishing.

E. J. H.—Fallowfield, 146, Charing Cross Road, Circular print washer would probably suit you.

H. S. NOBLETT asks us how to reduce a negative over-intensified with mercury. Unfortunately, there are several methods of intensification, and what will answer for one will not answer for another, but Howard Farmer's ferridcyanide and hypo reducer will reduce all. Soak the negative in water, then in hypo solution, and add a few drops of 10 per cent. solution of ferridcyanide of potash; the more of this the greater the reduction.

W. KEATING, JUN., has a very good negative but a bad spot in it, and wants to know how to block out the sky without showing a sharp line, the roof having an ornamental line. This is not an easy matter, but we would suggest coating the back of the spot with collodio-chloride emulsion then exposing the film side to light; the light will act through the spot and reduce the collodion emulsion, which would then, after toning and fixing, protect that place. Not seeing the negative makes it more difficult for us to advise, but we have never yet seen a spot that could not be touched out if time, patience and money was no object. Another method would be to print on ordinary albumen paper, cut out the sky roughly, allow it to blacken thoroughly, then print in the ordinary way, using our sky mask to block out the sky and keeping it on the move during the whole of the printing so as to avoid a hard outline.

SIDNEY SMITH.—We are very pleased to welcome you as a reader, and are much obliged for your offer, which we will communicate to our correspondent. The two films you send are all that can be desired. This correspondent asks how to get the distance out clearer in his prints. With regard to the distance, one must remember that the very faintness complained of gives the idea of distance; therefore, to destroy this jams the whole thing into one plane, and it looks like a map. However, to make any object print out more without damaging the shadows, we must have recourse to the process called harmonising harsh negatives, which has been previously described in our columns but which we again give. Soak the negative after thoroughly washing out the hypo in

Bichromate of potash	10 gr.
Bromide of potash	5 ,,
Water	1 oz.

till the film is soft. Pour off the solution, and add to it

Nitric acid	5 drops

and leave till the film is thoroughly bleached. Bathe in three changes of alum solution and wash thoroughly. Redevelop with

Pyro	2 gr.
Ammonia	2 min.
Water	1 oz.

The shadows will develop first, then the half tone, and finally the high lights, in this case the distance. As soon as the shadows and half tones are developed and before the distance or high lights are quite developed through, which can and must be seen by looking through the glass at the back, drop the plate in a hypo solution and wash thoroughly. The only important point is to know when to stop development. The rationale of the process is simple. The image is converted into bromide of silver and redeveloped, but this process is not carried so far in the high lights as in the original negative, hence they are not so dense and print through better. This operation may be done in gaslight or weak daylight, and old negatives should be washed in weak ammonia before bromising, so as to remove any grease.

E. G.—(1) Sol. soda means saturated solution of washing soda. (2) Can Nikko paper be developed with Ilford hydrokinone bromide developer? Yes. (3) How can detail be obtained first, and then density, with the Ilford hydro formula? Dilute with three or four times the quantity of water, give it time, and exercise your patience; when all the image is out, pour off and use a strong developer. (4) Is the Ilford hydro developer the best for ferrotype dry plates? The correct formula is—

Water, warm	1 quart.
Carbonate of soda	½ lb.
Sulphite of soda	½ ,,
Hydroquinone	½ oz.
10 per cent. sol. of bromide potash ..	2 ,,
Sat. solution of hypo	½ ,,

F. G. CLARKE.—The cause of your print turning brown is due to using too powerful a light or else under-exposure, and forcing. We have been very successful. What was the print sent for? We forget now—please write again.

F. H. R. sends a P.O.P. print, and asks why he gets such a brown tone with the paper and bath. We should call the print a dirty grey, due to over-printing, a weak negative, and over-toning, or else to printing in too strong a light. The fault is in the negatives, we think, not in the paper and toning, and if some more prints and negatives are sent up we may suggest something.

CLICHÉ.—We cannot help thinking you have overlooked our reply. We remember your name very distinctly. We must, however, try and make up for the fault, if it is ours, now, and we shall be pleased to see prints. (1) Can sepia tones be obtained on bromide prints developed with metol, with the aid of the uranium bath? Yes, but not so readily as with ferrous oxalate developed prints. Why, we do not know, but it is so. (2) Can we lend some prize prints? Yes—we will look you out a dozen or so, and send on. (3) Not yet definitely decided, but we make it 140 W.

C. W. F. sends us a print which is from a negative which was taken because of the beautiful play of sunlight and shadow; the print is not so "beautiful." Quite true; it looks very much as though a snowstorm had come in midsummer. The negative is far too hard and chalky. We should reduce it as suggested this week in answer to S. Smith, or else print on rapid bromide paper, giving a full exposure so as to reduce the contrast.

W. E. sends us some experimental results on unexposed chloride paper; one piece was washed, toned, washed, and fixed, the result is a dirty yellow. Now the toning bath was contaminated with hypo, and a piece of paper was washed, toned, transferred straight to fixing bath, and left there an hour; result, this piece much whiter. Is it possible to get a pink tone on unexposed chloride paper, and if so, how? We should say not. We believe the pink tinge is only caused by a very weak action of light primarily, and secondly by the toning bath. We intend to try some experiments, and shall then talk.

T. W. H. (1) has tried the metol formula for bromide paper on p. 286, and cannot get an engraving black. We would suggest that the reason is over-exposure. Cut the exposure down by one-fourth, and then try. (2) Can you suggest a method of rendering mounted photographs flat whilst copying? Certainly; cut a sheet of thin whitey-brown paper quarter of an inch smaller all round than the mount, paste the back of the mount, lay down on the paper, and smooth into contact, and the poor mount involuntarily straightens himself, he objects to a plaster on his back. (3) Can you give me a formula for warm tones with metol and lantern plates; if so, whose plates? Try the following:—

I.

Metol	50 gr.
Sodium sulphite	½ oz.
Citric acid	10 gr.
Water, to	10 oz.

II.

Liq. ammonia .880	1 oz.
Water	10 ,,
Ammon. brom.	1 ,,

III.

Ammon carb.	1 oz.
Water	10 ,,

Give fairly long exposure, and take 1 oz. of No. 1., 10 min. of II., and 40 min. of III. Any plate advertised to give warm tones may be tused, except a chloride. (4) Send us up one or two negatives to look at. Many thanks for good opinion.

F. E. BIRCH has some negatives with wavy marks, which he ascribes to non-rocking of dish when using a soda developer, and asks how to remove them. This is almost hopeless, we are afraid, but we should like to see the negatives before saying more.

W. A. VICARY.—(1) No. 1 is over-exposed and under-developed. (2) No. 2 is also over-exposed but better developed. (3) No. 1 print is the only result you could get from such a thin negative. To get a better print you must intensify the negative. (4) No. 2 print is better, but still flat, due to the thin negative. We should advise you to use pyro, or else carry development a great deal further. We should have thought that about 1 sec. exposure was enough for such a subject under the conditions you name. Shall be pleased to answer other queries if we can.

OMEGA.—(1) A good result, considering the trying conditions under which it was taken. (2) The negative is, we should say, fogged generally, and also at the bottom. The general fog may be due to having a bright light, due to so much glass opposite the lens, or to over-exposure. (3) This is a long way the best. It is brighter and more correctly exposed than the others. (4) The curious dark patch in the centre is due, we think, to what is called a flare-spot. (5) Over-exposed and fogged at the right-hand corner, which makes it so faint in the print. (6) Over-exposed. You are working the wrong way; your camera should be where the sitter is now. Will you send us up a sketch of the conservatory, giving the length and its position as regards the house, etc. The reason why some negatives are so faint and dingy is due to fog. When you want to develop pour out No. 1 solution, and add only one quarter of the usual quantity of No. 2, diluting with water, and rock the dish till you see some sign of an image, then as soon as the image appears, and won't go any further, add another quantity. There is quite a possibility of your turning out good work if you persevere. What lens and camera are you using?

MARCUS uses a sulphocyanide bath and asks—(1) When remaking bath I use the old bath by adding gold. Should cyanide be added too, and if so, how much? Yes, half the quantity of cyanide should be added. (2) Is it advisable to add French chalk; if so, how much? French chalk is insoluble in water, and the only possible effect of adding it would be to introduce some impurities which would precipitate the gold. (3) If the bath is acid to litmus, how should it be made alkaline? Add 10 gr. of bicarbonate of soda for every grain of gold used. (4) I back prints with cartridge paper and mount them with common hot glue. In spite of every care the impression shows on face of print. How can this be avoided? In the first place, the hotter a liquid the quicker it will penetrate through paper. Cartridge paper is not waterproof, but if one of the special waterproof backing papers, as sold by Whee er and Co., of King Street, Manchester, and others, was used hot glue might be used. If cartridge paper is preferred, the best plan would be to paste the back of the cartridge paper with fresh stiff starch paste whilst the print is on the glass allow to dry, and then a very little fresh paste when stripped would cause it to adhere.

J. SHAW asks whether he may send in a slide to our Monthly Competitions which has taken a medal at any exhibition. No, we do not allow medalled slides or pictures to compete. He asks a question as to forms. We refer to this elsewhere.

REMOTE asks whether it is advantageous to use an acid fixing bath for fixing negatives, and what formula should be used. An acid fixing is advantageous, as it keeps the negatives free from stain and hardens the gelatine. Dissolve 2 oz. of sodium sulphite in ½ pint of water, add ½ oz. of tartaric acid, and, when dissolved, add to 1 pint of 1 : 4 solution of hypo. The quantity of acid may be increased to 1 oz. if a stronger acid bath is required.

A. A. E.—The Blair Camera Company, 9, Southampton Street, Holborn, E.C., can supply what you want.

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

The Stanley Show opens to-day (Friday), at the Agricultura Hall, and we understand that the photographic section will be a thoroughly representative one, containing pictures by all the leading workers, there being about 600 frames by over 170 exhibitors. The apparatus division, which is this year in the main gallery (East), will be occupied by some of the leading firms, with several novelties and improvements. The hand-camera, lantern slide, beginners, and landscape competitions are well patronised, and the society competition has attracted four competitors. The various and numerous excursions arranged from all the principal towns should attract our provincial readers.

In publishing the letter from F. Tims, on plate-makers' formulæ in our last we did an injustice to the Britannia Works Company, and if our correspondent had carefully read the instructions, he would not have written the letter, nor should we have published it The directions which we print below are sufficiently explicit to enable any one to modify the developer to suit certain errors of exposure.

Stock Solution.

Pyrogallic acid	1 oz.
Water, to	6 „

When dissolved, add 20 drops nitric acid. This will keep for a considerable time.

(Of course, where large quantities of developer are used, it will be easier to make the pyro solution up to 60 oz. at once, and dispense with the stock solution.)

No. 1.

Stock solution	2 oz.
Water	18 „

No. 2.

Carbonate of soda (crystals) (not bicarbonate) ...	2 „ (av.)
Sulphite of soda	2 „
Brom. potass	20 gr.
Water, to...	20 oz.

For use take equal quantities of Nos. 1 and 2. For portraits, etc., where less contrast and density are wanted, use half quantity No. 1 and make up with water.

Pour the developer carefully over the plate, avoiding air bubbles, rock the dish, carefully keeping the plate well covered with solution; allow the plate to remain after all detail is out, to obtain proper density. Judge of this by looking through the plate.

In cases of *over*-exposure, reduce the quantity of No. 2 solution.

In cases of *under*-exposure, dilute the mixed developer with its bulk of water, cover the dish, keep it rocking, and wait until all possible detail is out.

In fact, it will be seen that the exact modification which Mr. Tims suggests is given in the above directions.

We have repeatedly in the last few weeks called attention to a paper by Mr. J. McIntosh, of the North Middlesex Photographic Society, on "The Harmonising of Harsh Negatives,"

very valuable process which might often be employed by our readers with advantage, as it softens down harsh high lights and intensifies the shadows slightly. Mr. McIntosh has now kindly written to us and proposed an improvement, and that is, when the film has been treated with the bichromate, frequently an orange-coloured product is formed in the high lights which refuses to wash, develop, or fix out. Treatment with alum did not remove it, and the improvement suggested by Mr. McIntosh is the use of metabisulphite of potash first suggested by Mr. W. B. Bolton for another purpose, and this totally destroys the orange colour.

WE should be glad if some one could suggest a new term for this process. "Harmonisation, etc.," is a big mouthful; rehalogenisation is worse, and if we merely drop out the "is" it does not improve it very much. We have so often to recommend this that to get hold of some short expressive word would save us a lot of ink and paper, not to say trouble also.

YET another of those curious and disastrous accidents from the bursting of a gas bottle has occurred. On the 8th inst. a lad in the employ of Riley Bros., the well-known lantern firm of Bradford, was sent with two cylinders, which were, it is stated, "about a yard long," to the Exchange Station, Bradford, and for this purpose he had to go along an inclined subway, and, probably finding the load heavy, he dragged one along the ground. There was suddenly a tremendous report, and the boy was found horribly mutilated, the top of his head being blown away.

IT is stated in a local paper that fragments of the bottle examined afterwards show traces of flaws. Yet both these bottles had been tested, and were only charged at 120 lb. pressure to the square inch. It is also supposed that the bottle which was being dragged burst, but it seems quite possible that it was not this at all, but the one that was being carried on the shoulder, because of the injury to the head.

As stated by the local papers, "Another matter in connection with these cylinders is, so it is stated, that up to the present they have been sent by the various railway companies up and down the country, and accepted and handled as in no wise dangerous. One result of the horrible death of the boy will probably be to make the regulations in regard to the transmission of vessels containing compressed air (*sic*) more stringent in the future."

CERTAINLY if this is not the case everyone should learn to handle such things carefully. We have before now seen a bottle lumped down on to a railway platform in a manner that has made us shiver and clear off quickly. Although every precaution is taken, probably, in filling and testing these cylinders, still it is just as well to recognise that they may not be harmless.

THE *Glasgow Evening Times* has for some considerable time had a weekly column devoted to "Photographic Jottings," by "Camera," and last week this gentleman says:—

"I have been considerably surprised to find that no Scottish amateur's name appears among the competitors in the AMATEUR PHOTOGRAPHER'S latest lantern slide competition. As a general rule, workers this side the border make a good appearance in the competitions of that journal, and I am sure we have among us some of the best lantern-slide makers in the kingdom. Perhaps the prizes offered are not considered adequate. To my thinking, it is a mistake to make no difference between the prizes for prints and lantern-slides. A few prints can be turned out at small monetary cost, but it is a much more serious matter to prepare a set of lantern slides. Hence the prizes for the latter class of work should be at least twice the value of those offered for prints."

WE do not know, but imagine this refers to our Annual Slide Competition. We had not noticed the fact that no amateur from across the border had competed. We rather take exception to the latter part of our kindly friend's paragraph; we do not see why prizes for lantern slides should be at least twice the value of those offered for prints. If monetary value is to be the sole idea in winning our prizes our competitors had better take the cash and not the medals. We hope there is some honour attached to the medals.

WE believe our medals are now even of more monetary value than any others given, but, putting this on one side, we know many large cities this side of the border where an "A. P." medal is considered to rank second to none in honour. As a rule, it's a pretty tough fight to get one, particularly in the quarterly competitions.

Flotsam and Jetsam.

ONE would have thought that by this time no one could possibly have been in ignorance as to what a "Kodak" was. Yet apparently there are still some people so unenlightened. Travellers on the L. and N. W. Railway will remember how the familiar word greets them from the roof of the large works they pass on their journey. The other day a woman's eye was caught by the letters, and a woman's tongue gave utterance to the question, "Kodak! What's that? A new kind of soap?"

THE *Pall Mall Magazine*—Mr. W. W. Astor's interesting attempt to rival on this side of the Atlantic the excellence of American magazine literature on the other side—is rather roughly handled by many of the critics because of its illustrations. Perhaps there is some ground for this, but as to the quality of the illustrations contained in the November number, which are taken from photographs, there is no need to grumble whatever. The camera is a contributor that may always be depended upon. Not so the ordinary artist.

IN this same number there appears number two of what should prove an interesting series of examples of "Pictorial Photography," which seems to be the *Pall Mall's* shot at the word we wanted the other day to describe artistic photography. It is called "A Quiet Watering-Place," and the negative must have been an admirable one.

UNFORTUNATELY, it was engraved for reproduction, and though the general tone of the picture, the water, and the quiet summer beauty of the sunlit meadows and trees, has come out admirably, the cows which are drinking in the cool stream seem to have the mumps, and the head of one of them would serve admirably for that of a hippopotamus.

THE temperance lecturers have long pressed the magic lantern and photographic slides into their service. Now they are attempting to enlist the camera itself. A story was told at a recent meeting in the provinces of how the wife of a boon companion strove ineffectually to convince her husband of his not infrequent lapses from the path of sobriety.

BUT it was no use. He would never believe her the next morning. So she had him photographed on one of his hilarious occasions, and used the photograph with considerable, and, from the temperance standpoint, gratifying effect. What the amateur photographer in the audience wanted to know was—How was the photograph taken? How did they get the man into position? And what exposure was given?

THE lecturer did what the Scotch professor did—he looked the difficulty in the face, and passed on!

SUBMARINE photography is going ahead. A new lamp has now been invented by M. Boutan, a French photographer, which enables photographs to be taken by artificial light when the surface of the water is so disturbed as to interfere with the natural light. The lamp consists of a vessel full of oxygen containing a spirit lamp. By an ingenious device magnesium powder is projected into the flame at the moment the exposure is to be made. ANCHORITE.

Letters to the Editor.

HELPING THE LITTLE ONES.

SIR,—Many were the pleasant evenings spent last winter in our Home, thanks to the kindness of the Editor and the sympathising readers of my appeal last autumn. This kindly feeling prompts me again to ask for loans or gifts of slides or prints (named) to amuse and instruct our 200 little ones.—Yours, etc.,

THE HEAD MASTER.

Royal Albert Orphanage, Camberley, Surrey.

* * * *

MR. WOODBURY'S EXPLANATION.

SIR,—In reply to Mr. Wilson's letter to you regarding my publication of the Paget method of developing printing-out papers, I hasten to set right the evident misunderstanding.

At the time the matter was divulged to me I was making experiments in the same line myself, and had already succeeded by a preliminary conversion of the free silver into chloride and iodide, using the Paget lantern plate developer.

I was then informed of the method devised by Mr. Wilson using bromide of potassium. This I found superior to my own method; but was asked not to divulge same, nor have I ever done so until the publication of Mr. Wilson's method in a recent issue of your magazine, when I immediately wrote an article on the subject, which appears in the issue of the *Photographic Times* now in the press. I send you an advance proof herewith, and you will see that I give the fullest credit both to Mr. Wilson and the Paget Prize Company.

In the formula I give in the *Photographic Times*, and to which Mr. Wilson refers as iodide, is used a similar process, I tried nearly eight years ago, the only difference being that I substituted the Paget lantern plate developer for an old ferrous-oxalate one. I am willing to give every credit to the Paget Company for the perfection of a simple and effective method of development, far superior to anything else I know.—Yours, etc.,

WALTER E. WOODBURY.

* * * *

MAKERS' FORMULÆ.

SIR,—Your correspondent either *cannot* or *will* not read the instructions given on each box of Ilford negative plates, or he would have seen that these instructions *contain the very recommendations as to varying the developer which he advocates* in such a self-satisfied manner, as if they were original with him.

The statements in his letter are therefore absolutely untrue, and his remarks a gratuitous insult to us. The more so as we have done so much to render the path of the photographer as easy and pleasant as possible by the distribution of carefully-compiled pamphlets, etc., which deal fully with the methods of using the various plates and papers manufactured by us.—Yours, etc., THE BRITANNIA WORKS CO., LD.

Ilford.

[We refer to this on p. 323.—EDITOR.]

Finchley (Camera and Lantern Club).—On 7th inst. the first meeting was held. Lantern slides of very rapid instantaneous work were shown, the exposure being 500th of a second with Newman's Celeritas shutter on Lumiere plates; the lantern plates were collodio-bromide made by the exhibitor. The most striking subjects were a man throwing water from a pail (the water being perfectly sharp and in appearance like a lace curtain), a dog in the act of jumping, studies at Barnet Fair and on the Margate boat, the latter causing roars of laughter. Other slides were shown of views on the River Lea, rough seas at Hastings, etc. Subsequently some remarkably good interiors (platinotype and Ilford P.O.P. prints) from negatives on Sandell general plates were shown by the Hon. Sec., the absence of halation being wonderful. Next meeting, Tuesday evening, Dec. 5th, examples of isochromatic photography, etc.

Exhibitions.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE society is to be congratulated on a very good show. The work is of a high class, and the classification and arrangement is also good. The judges, Messrs. F. P. Cembrano, jun., W. E. Debenham, and Leon Warnerke, have possibly, with one exception, made as good a decision as can be expected.

In Class A, Members, Portraiture and Figure Study, including animals, the first noticeable picture is C. F. Dickinson's portrait. Mr. W. E. Harman's three little pastoral scenes are very good, and to one, a "Group of Sheep," the judges gave a bronze medal, a similar award going to an interior of a cottage with an old couple seated by the fireside, entitled "Peaceful Old Age," by Howard Ester, a good study printed on rough paper, and exceptionally happy in lighting.

Class B, Architecture, for Members, is certainly the best of all the members' classes. The work is generally of a high order, and a poor print is not to be found. H. E. Farmer takes a silver medal for "Across the Octagon, Ely," and Messrs. Bull and Howell take bronze medals for "Tomb of Edward the Black Prince," and "The Choir, Rochester." Messrs. Oakden, Harman, and Symes also show some excellent work.

Class C, Landscapes and Seascapes above half-plate, E. H. Cricks takes a silver for "An Essex Swamp," the best of four good ones sent in by him. Other good pictures are 75, by J. T. French, and 85, by H. E. Farmer.

Class D, Landscape and Seascape, half-plate and under, Miss Smyth takes the silver medal for "Friars' Crag," the best most certainly of her work, and W. F. Slater takes a bronze for 168, "On the River Cam," a striking contrast to his "Evening on the Thames," which is very poor. We should like to know why 160, "A Smith's Shop," by W. Howell," was handicapped by being put in this class. It is neither landscape nor seascape, and ought, we think, to have received recognition, as it is an excellent example of extremely difficult work well executed.

Class E, Enlargements: no awards were made here, a fact which one might cavil at in the face of Mr. Dickinson's animal studies, which were very fine.

Class F, Lantern slides, Mr. Dickinson again wins a silver medal for flower studies. For general excellence Mr. C. H. Oakden, the hard-working Secretary, wins the blue ribbon of the society, and we are sure that he will deserves it. His work all through is very good.

Class G, Champion Class: Mr. J. B. B. Wellington takes a silver medal for his well-known "Evening," and Mr. C. H. Oakden a bronze for "North Aisle, Ely." There is some good work here, notably A. G. Tagliaferro's clever study of "The Cut Finger," a small urchin having his wounded member bound up by a grandmotherly old dame. Smerdon Roe, Stone, Terras, Douglas Pym, and Byrne also send in good work.

Class H, open for pictures not previously medalled, is, we think, the strongest. W. J. Byrne takes the silver medal for a very fine and large study, whilst A. G. Tagliaferro takes a bronze for "A Humble Offering," which represents a simple maiden making a votive offering of flowers at one of the wayside shrines so often met with in the sunny south, whence this worker draws so much of his inspiration. Byrne also takes a bronze for a good red carbon study. A capital little study, rich in quiet humour, is T. E. H. Bullen's "Have a Piece, Dick?" the expression on the boys' faces being exceptionally happy. Such well-known men as Dresser, Warneuke, Terras, Avery, Thomas, and West have also sent in, and make an exceptionally strong class, which, backed up by loan pictures from F. W. Edwards, Mr. Thos. Fall, and carbon pictures by Elliott and Son, and specimens of chromo-collotype by E. J. Wall, and chrom-photolithography by W. Griggs, gives one plenty of opportunity for learning lessons. In the open Class J, for previously medalled slides, Messrs. G. E. Thompson and W. Taverner take silver and bronze medals, and in Class K Messrs. G. Hankins and J. H. Gear are the medal winners.

A good show of apparatus, etc., is made by W. F. Slater, whose novelties we shall notice again; T. H. Powell, with compressed chemicals; and Messrs. Howell, The Prosser-Roberts' Drug Co., and Parkes' Drug Stores, and a small case of Burroughs and Wellcome's "Tabloids."

Leeds (Camera Club).—On 9th inst. thirteen new members were elected, after which Dr. Thos. Thresh, Ph.D.L.R.C.P., etc., President of the club, gave a lecture describing a recent tour in Old and New Flanders. The lecture was illustrated by 192 lantern views, and gave some splendid pictures of ancient architecture, sculpture, church interiors, etc., whilst a set of snap-shots taken in the grounds of the Antwerp Zoological Gardens were at the same time amusing and interesting.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER VI.—(*Continued.*)

(B) *Action of Ammonia and Carbonate of Ammonia on Bromide of Silver in the Act of Formation.*

IT is by no means indifferent as to the final results whether the bromide of silver is emulsified in neutral or acid solution and then ammonia added to the prepared bromide of silver, or whether ammonia is already present during the mixing. In the latter case—if it is present during the formation of the bromide of silver—the action is more favourable, that is to say, it produces a quicker and higher increase of sensitiveness than in the former case.

The ripening of the emulsion takes place very quickly if the silver nitrate is mixed with ammonia and the ammoniacal silver solution is poured into the bromised gelatine. Dr. Eder made the first experiments in this direction with Captain Pizzighelli in 1880. The favourable condition and behaviour discovered then and published in the same year guided him in his "Process 1 with Ammonio-Nitrate of Silver" in the first edition of this work, 1881. A solution of citrate of silver in excess of ammonia acts in a similar manner; this method is described further on in detail. The ripening takes place just as quickly if one adds ammonia to the bromised gelatine solution and adds the silver nitrate solution as usual. In this case also the ammonia acts at the moment of formation of the bromide of silver.

(C) *Ammonia in the Liquid Washed Emulsion before the Preparation of the Plate.*

Alkalies act very energetically on washed bromide of silver, because the restraining bromide and nitrate of ammonia, etc, are removed. Yet one can make a very small addition of ammonia, in order to obtain a supplementary increase of the sensitiveness; for instance, 1 drop of concentrated ammonia, sp. gr. ·91, mixed with some water to 1 to 2 litres of emulsion. It is advisable, indeed, in this case to add also a trace of bromide of ammonium. (See Chap. VIII.) Henderson[1] described cases where one can add much more ammonia than is here suggested. If a good emulsion, free from fog, of 14° Warnerke, is mixed with ammonia, 1 drop to 30 grammes of emulsion, and is allowed to stand at the ordinary temperature of a room, the sensitiveness rises to 21° Warnerke after four days, that is, to five times as great. Green fog, however, begins to show, and some days later strong red fog is formed and the sensitiveness again sinks to 17° W.[2]

Gelatine emulsions which are prepared with ammonia often retain some ammonia, in consequence of defective washing; if melted a second time the sensitiveness increases considerably; for instance, in a case observed by Cowan, to eight times.[3] Since bromide salts are also present, fogging is also prevented.

Carbonate of ammonia, a few drops of a 10 per cent. solution to 1 litre of emulsion, acts less violently than ammonia and there is also less risk of fogging with it. On the action of soda, see Chap. VIII.

(D.) *Action of Gaseous and Liquid Ammonia on Gelatino-Bromide of Silver Plates.*

Ammonia has also an action on prepared gelatino-bromide of silver plates, which is not dissimilar to that which it exerts during the preparation of the emulsion. I an insensitive gelatine plate is bathed in a weak solution of ammonia—for instance, 1 to 10 parts ammonia to 100 parts of water—and then dried, it becomes more sensitive and develops more quickly and more vigorously than before this treatment. One must be careful, however, since by the use of too strong ammonia fog is caused.[4]

If dry gelatine plates are exposed for some minutes to the fumes of strong ammonia, as given off at ordinary temperatures, and exposed immediately in the camera, they are distinctly more sensitive. Damp gelatine plates which are exposed under a closed bell-glass to the fumes of ammonia become more sensitive and coarse-grained and in time reticulated and partly transparent through the separation of coarse granular bromide of silver, which looks like hoar frost on windows.[5]

If gelatine is soaked in a solution of bromide of silver in ammonia, there is no separation (cloudiness) (of bromide of silver) on drying. The film gives no image capable of being developed in the oxalate developer, but there is a general reduction (green fog[6]).

(VII.) THE OCCURRENCE OF BROMIDE OF SILVER IN VARIOUS STAGES OF RIPENESS IN THE SAME EMULSION.

Gelatine emulsions always contain bromide of silver in various stages of ripeness; that part of the bromide of silver formed at the commencement is formed in greater excess of bromide of ammonia, etc., than that formed last. If one works with ammonio-nitrate of silver, the quantity of ammonia also changes during the mixing. One part is also naturally digested longer; certain parts near the walls of the flask become heated at other temperatures earlier than those parts in the middle, etc. The correctness of these speculations can be also proved experimentally. If one boils a diluted emulsion poor in gelatine for three hours, and separates the sediment, by allowing it to settle down, into different parts, according to the more or less quick deposition, the result is that the coarse granular bromide of silver which is deposited first, gives when emulsified in neutral gelatine a transparent emulsion which shows 14° on Warnerke's sensitometer with faint fog. The second portion gives a fine emulsion and 24° W.; the third part, which settles down last, gives 21° W., and is free from fog.[7] Plener's experiments with his centrifugal machine[8] (see Chap. XVII.) yielded similar results. With a half-ripened emulsion prepared with ammonia the fine powdery bromide of silver is more insensitive, the somewhat coarser (denser) bromide of silver, which gives equally as fine emulsions, is more sensitive. In emulsion which has been ripened long and is near the maximum of sensitiveness, the coarse granular bromide appears strongly fogged, whilst the fine portion is very sensitive and gives clear images.

If a gelatine emulsion which has been poured on glass plates sets slowly, it often happens that the bromide of silver separates. The coarser (gritty) portion of the bromide sinks on to the glass, whilst the surface is poor in bromide. Then it may happen that such slowly set

[1] *Photo News*, 1883, p. 78.
[2] *Photo News*, 1882, p. 753.
[3] *Photo News*, 1881, p. 97.
[4] *Photo. News*, 1881, p. 97.
[5] Dr. Lohse (*Photo. Archiv.*, 1888, p. 139) prepared a fine-grained, insensitive emulsion by mixing silver nitrate, gelatine, and bromide of ammonium, which he, after washing, spread on glass plates, and whilst still damp exposed to the fumes of ammonia; the sensitiveness increased, but the grain was too coarse. He bathed, therefore, dried plates in alcohol, 50 per cent., after which he fumed them with ammonia. The sensitiveness was low, but the grain fine.
[6] First suggested by the author in 1882 (*Photo. Corresp.*, 1882, p. 148).
[7] *Photo. News.*, 1883, p. 81.
[8] *Photo. Corresp.*, 1882, p. 306.

plates give thin, flat images and blister; if the gelatine film is stripped, there remains behind on the glass a thinner image on the coarse granular bromide of silver. In other instances the plates give thin but fogless images on the surface; from the glass side of the plates, however, the negatives appear strongly fogged, which is caused by the separation of the decomposed coarse granular bromide of silver.

On the premeditated mixing of emulsions of different sensitiveness and different intensity, see Chap. XII.

(VIII.) The Relation of the Colour of Gelatino-Bromide of Silver in Reflected and Transmitted Light to its Sensitiveness.

Bromide of silver suffers during the ripening process a change of colour. The yellowish-white colour by reflected light changes into an olive-green shade (transition of the "white," modification into the "green"). At the same time thin films of the emulsion allow no more yellowish-red light to pass through, but reddish violet to grey violet or greyish blue. Monckhoven first announced this change of colour.[9]

The colour of the emulsion is some guide to its sensitiveness. It applies to every single bromide of silver emulsion, that the shade of colour becomes more greenish in reflected light, and more violet or blue in transmitted light, the longer it ripens. But these shades are very different in emulsions which are prepared by different processes. An emulsion prepared with ammonio-nitrate of silver at 40° C (see below) appears always rather blue by transmitted light, even if it is insensitive; a boiled emulsion without ammonia is much more sensitive, and appears still by transmitted light reddish-violet. Still, in one and the same emulsion, films, by long-continued digestion, always transmit more bluish-violet light, and at the same time become more sensitive.

According to Wolfram,[10] the grain of bromide of silver is fine, if the ripening process is so managed that it takes place in a short time, ten to fifteen minutes; the change of colour is then yellowish-red, reddish-violet, bluish-green, greenish-red, and becomes, finally, rosy. The liquid emulsions show this colour. When dry, the same colour remains persistent, or if the ripening process has not yet been continued far enough, the colour changes back in the above order.

Additions of iodide and chloride of silver alter the shade of colour. It becomes then often difficult to make a guess at the sensitiveness.

CHAPTER VII.

FOG IN GELATINE EMULSIONS.

If the plate is blackened generally in the developer, the real image caused by light is more or less covered. This general blackening is called "fog."

Fog can arise if too much yellow or red light falls, through incautiousness, on the plate, or if stray white light be present. This is the so-called "light fog."

The decomposition of the bromide of silver can, however, be brought on by too long cooking, by bad gelatine, by too much ammonia, etc. This is the so-called "chemical fog."

The cause of both kinds of fog, however, is that the bromide of silver has been reduced in small degree to silver sub-bromide, and that this is blackened in the developer. Both can be destroyed by the addition of bromine or iodine, and further by chromic acid salts.

A particular kind of fog is the so-called "pressure fog," which arises if bromide of silver is very strongly pressed. It can be observed if the bromide of silver has been separated by Plener's centrifugal machine and the velocity of the same was too great, so that the bromide forms a compact mass strongly pressed together, which emulsifies with difficulty and gives foggy images. This kind of fog is not destroyed by bromine and iodine. Very coarse granular bromide of silver also, which is deposited after too long boiling, is foggy, and can only be restored with difficulty by means of the known chemical reagents.

On the action of pressure on gelatino-bromide of silver plates, see further.

Fog is also the result of a soluble compound of silver, and it appears in various colours in pyro development, and is called "green" or "red fog;" this will be treated of in the chapter on "Failures."

(I.) The Formation of Chemical Fog in the Preparation of the Emulsion.

All means which have been suggested to obtain highly sensitive emulsions tend to the formation of fog.

If faintly acid gelatino-bromide of silver is heated at 30 to 40° C., the sensitiveness rises from day to day. About the seventh day, sometimes earlier, sometimes later, the emulsion begins to be decomposed; it then gives fog in the developer, that is to say, it is blackened also on the unexposed parts. At higher temperatures the emulsion ripens more quickly, and the fogging appears mostly after three-quarters to two hours, sometimes sooner, sometimes later. All kinds of gelatine do not, indeed, behave alike.

In neutral solutions of gelatine the fogging takes place quicker with long digestion or boiling than in faintly acid solution. A trace of acetic, hydrochloric, or nitric acid is sufficient to keep the emulsion clear. Therefore many photographers acidulate the emulsion when preparing the emulsion by boiling, because the limit of fogging is not so easily overstepped. By digestion with moderate heat the change takes place much more slowly, so that one can easily watch over it (even without acids). Too much acid is prejudicial and delays the ripening.

In the presence of substances of an alkaline reaction the emulsion ripens even at lower temperatures, and one dare not increase the heat during the process of ripening very much, else fog appears. At ordinary temperatures, 1 to 2 per cent. of liquid ammonia, sp. gr. ·91, produces no fog, not even after eight days. Digested with ammonia at 30 to 40° C., fog is sometimes formed even after an hour, mostly, however, only after three to four hours, with certainty, however, after twenty-four hours. At 60 to 70° C. the gelatino-bromide of silver is after six hours totally ruined; at 100° C. the decomposition takes place almost immediately. A trace of caustic potash produces no fog at ordinary temperatures; at 100° C. it decomposes, however, the bromide of silver so energetically that the emulsion turns brown and metallic silver separates out. Large quantities of caustic ammonia (*e.g.*, 10 per cent.) are very dangerous in the emulsion; they frequently cause fog even at 30° C. Alkaline carbonates, such as carbonate of ammonia and soda, act more mildly. One can boil a bromide emulsion with $\frac{1}{4}$ to $\frac{1}{2}$ per cent. of solid carbonate of ammonia itself for ten or fifteen minutes without fear of fog. An emulsion stands even 1 per cent. of carbonate of soda without giving fog with one hour's heating to 30 to 40° C. It is palpable, however, that fog is formed by long-continued heating.

[9] *Photo. Corresp.*, 1879, p. 149, from *Bull. Assoc. Belge de Phot.*, 1879.

[10] Eder's "Jahrbuch f. Photogr.," for 1888, p. 437.

Since gelatine emulsion behaves quite differently in the presence of an alkali than with a faintly acid reaction, attention must be paid to this point. Acid gelatine does not hurt bromide of silver even at boiling temperature for some time. Alkaline gelatine easily causes fog. If an alkali is not added on purpose and its secondary decomposing action is not taken into consideration, a gelatine which turns alkaline becomes troublesome. Thus, for example, in the processes in which the emulsion is boiled. In the same way the evolution of ammonia during several days' digestion at 30 to 35° C. (Bennett's process) will be equally troublesome if one is not prepared for the unconsidered after-effect of the ammonia, which with longer digestion gives fog. In such cases acid gelatine should be used which does not usually evolve ammonia after ten days, as alkaline gelatine, even after two to four days, gives off ammonia. Alkaline gelatine and alkaline bromide of potash are harmless if one adds ammonia designedly at the beginning, for then the whole mode of working is adapted to the alkaline liquid.

The fogging of the emulsion is counteracted by the following :—

(1) An addition of iodide of silver to the bromide of silver. Bromo-iodide emulsion does not spoil so easily in boiling, and withstands the ammoniacal process also better.

(2) Excess of soluble bromide, during the heating. An emulsion which contains no excess of soluble bromide salt fogs easily; for this reason one must not heat a washed emulsion in the second melting too much, but keep it under 50°—60° C.

(3) Excess of soluble chloride acts in the same way against fog during the ripening, but not to such a high degree as the bromide.

(4) In the boiling process, an addition of acid acts as an anti-fogger.

Separately precipitated and washed bromide of silver, boiled with gelatine, gives fog more easily than with glycerine and gum arabic.[1] Gelatine behaves as a reducer, not only towards silver but generally, which Bizio discovered some time ago; he found, for instance, that mercuric chloride was reduced by watery gelatine to subchloride, and mercuric oxide was reduced by alkaline solution of gelatine to metallic mercury.[2]

A small reduction to silver sub-bromide, which is not visible by any dark colouration, is induced by the action of watery gelatine for a month on bromide of silver in the cold, by its acting for one day at 30—40° C., and by a minute's digestion at 100° C. We ought not, therefore, to wonder that alkaline emulsions fog quicker than acid ones. Collodio-bromide of silver also fogs, if it is in contact for a month with tannin, gallic acid, etc. In the dry state gelatine appears to have only an extremely weak reducing action on bromide of silver; at least, thoroughly dry emulsion does not fog even after several years as a rule.

Bromide of silver may be easily reduced to metal by means of a chemical developer or by a short exposure, or else by digestion with very weak reducing substances (bromine-absorbing substances); in both cases one can continue the reduction till the salt becomes brown by continued action, of light or the said substances. It is interesting to note that any substance which retards the formation of the latent image also produces the analogous retardation in the digestion with faintly decomposing substances. The action of soluble bromides is especially worthy of notice in this direction. Bromide of potassium retards the photographic decomposition more strongly when present in greater excess. In the presence of a considerable excess of potassium bromide the gelatine emulsion, as well in digesting the same by itself as with some ammonia, receives with much greater difficulty the tendency to be blackened by the developer, than in the presence of a small quantity of the same.

The photographic decomposition of bromide of silver, which it suffers by a short exposure in the camera, is explained according to the above, not as a peculiar process, but as the result of a partial, minute disassociation of bromide, which may be attained also in another way.

(II.) Substances which Destroy the Fog of Gelatino-Bromide of Silver.

The knowledge of these chemical agents is important, because many contingencies may give rise to the formation of fog.

The simplest and least prejudicial remedy to avoid (or to destroy) a faint fog is the addition of some bromide of ammonium or bromide of potassium to the liquid washed emulsion before coating, which will be fully described further on. Tincture of bromine acts less satisfactorily; iodine or chlorine only succeed completely in the melted emulsion. On the action of chromates, see further on.

As baths for dry plates, which have been spoilt by the access of light, the following, published by the author in 1881,[1] may be used :—1 part of bichromate of potash, 3 parts hydrochloric acid, and 100 to 150 parts water; or, 1 part bichromate of potash, 3 parts sulphuric acid, 100 to 150 parts water. The plates should be bathed for an hour or more, washed for an hour, and then dried. The sensitiveness of plates thus treated sinks always considerably, for which reason this and other similar remedies are but little used. Also a mixture of bromide of ammonium and nitric acid destroys the light image,[2] not so thoroughly, however, as the chromate baths.

(To be continued.)

Hexham.—The first indoor meeting of the winter session was held on 28th ult. The AMATEUR PHOTOGRAPHER Prize Slides were exhibited and much admired, also a number of members' slides. Messrs. Auty and Lee have consented to act as judges in the forthcoming members' competition.

Kingston-on-Thames.—At the second meeting of the Preliminary Committee held on 28th ult., the Rev. G. I. Swinnerton presided. It was decided that the prospectus be sent out in the form of a letter from the Hon. Secretary to all persons in the neighbourhood who are known to be interested in photography, stating that a general meeting will be held at the Albany Hall, Kingston-on-Thames, on Friday, November 17th, at 8 p.m., for the purpose of forming the society and electing officials, and that the Rev. G. I. Swinnerton will take the chair.

Leicester.—An extraordinary meeting was held on 23rd ult., to witness a demonstration by Mr. Herbert Fry, of the Paget Prize Plate Company, on their print-out paper and lantern plates. A large number of members were present. The demonstration was intended to show the capabilities of the paper and plates, when assisted by development after the paper and plates have been partially printed. After a few remarks by Mr. Fry on the use of the process and its value generally, he proceeded to develop a lantern plate and 10 by 8 print which had previously been exposed for different and uncertain periods, and which were developed into strong, vigorous prints full of detail and perfect in all respects, showing unmistakeably the value of the process in a commercial sense and to those who have not much available daylight.

Leigh.—The meeting was held; Mr. James Ward, B.A., presided. Apparatus was shown, and Mr. Robert Lee submitted some bromide prints of the coal pickers which have been reproduced in sketches.

Newcastle-on-Tyne.—On the 7th inst. Mr. J. P. Gibson, President, in the chair, the Chairman opened a discussion on printing processes, which was continued by Messrs. Auty, Arnott, Brewis, Brown, Park, Parry, and Watson, who exhibited specimens of almost every process.

[1] *Brit. Journ. of Phot.*, Jan. 1881.

[2] "Berichte der Deutsch. Chem. Gesellsch," vol. 9, p. 1,438.

[1] *Photo. Archiv*, 1881, p. 109.

[2] Recommended by Sherman for the restoration of exposed plates —"Photo. Alm.," 1877, p. 112.

The A B C of the Lantern.

Copying. A knowledge of photography confers upon the lecturer and lanternist an almost inestimable boon, for he has thereby the means at his disposal of making lantern slides by the process known as "copying" from rare engravings, old woodcuts, paintings, original sketches, or of reproducing faithfully, with the utmost exactitude, scientific diagrams, plans, tracings, mathematical or algebraic calculations, etc., etc.

The process consists in first making a negative in the ordinary way of the object to be copied, and from that, either by contact or in the camera, making a lantern slide. The process is by no means difficult if certain recognised conditions are adhered to. These are, in the main, a suitable light, a suitable plate, and a suitable developer, though other essential matters will be referred to in detail later. Assuming that a diagram is to be copied it becomes necessary, in the first place, to so arrange the apparatus as that we may work in convenience and comfort. Now matters would be simplified if all the pictures or diagrams to be copied were of the same dimensons, for then having once arranged our apparatus it would subsequently scarcely ever require readjustment. The most primitive method of working would be to attach the print to a wall with pins, place the camera upon the tripod, and make the exposure. But anyone who has tried to work in this way will soon appreciate its difficulties. Therefore a copying apparatus may be regarded as essential to ease and comfort in working. Fortunately, it will be neither costly nor difficult to construct. It is simply a long board at the end of which the diagram or plan to be copied is supported, and forming a sliding table or support for the camera. Such an arrangement could be put together in an hour by any carpenter. It will be found best to use a short-focus lens, and reduce the picture down to quarter-plate or lantern size so that the slide may be made from it by contact. The first difficulty is the lighting. The desideratum is even and equal illumination; this cannot be secured in a room lighted by an ordinary window, even though a reflector be employed. If a skylight or a conservatory with top light is available, then good work can easily be done, or the apparatus may be set up out of doors in diffused daylight, but actual sunlight should in any case be avoided. The picture to be copied should, if framed, have the glass removed, it being always difficult when copying through glass to avoid reflections and false lights from adjacent objects. Focussing presents no difficulty, but should be carefully done so that a sharp image is obtained. In the case of a painting, or a photograph which is not sharp, focussing is rendered easier by attaching a small piece of printed matter to the copy, taking care of course to remove the same before exposure. The lens should be stopped down to *f*/22 or *f*/32, so as to ensure good marginal definition. When good, even, daylight illumination cannot be obtained, the work may be satisfactorily carried out by means of artificial light. The apparatus is set up precisely as above described, and the lights employed, whether limelight, gas, or oil, are placed one on each side of the camera and in such a position that no direct rays can enter the lens. Where gas is available two of the improved Welsbach incandescent gaslights will be found to answer admirably, and to require but a brief exposure, the light being of a very actinic character. Failing gas or the lime light, two ordinary paraffin lamps may be used, but if employed, a smaller stop than is actually necessary to secure the desired amount of definition should not be used. An ordinary rapid dry plate is unsuitable for this class of work, and a box of photo-mechanical plates, which are specially made for the purpose, should be procured. These are considerably slower, and are capable of giving great density, and clear glass in the shadows, the two conditions at which we aim. Experiment alone will determine the proper amount of exposure, but it should be as correctly timed as possible.

We have in a paper print, an engraving, or a diagram, black lines on a white ground, and it will naturally be our endeavour to reproduce that effect as faithfully as possible. To do this successfully we must get a dense negative, at the same time preserving the clearness of the lines. This we can only do by using a plate of the kind referred to, giving a correct exposure, and using a suitable developer. For this purpose hydroquinone cannot be surpassed, and in our hands we find the following standard formula work well:—

No. 1.

Hydroquinone	90 gr.
Sulphite soda	6 dram.
Bromide potassium	14 gr.
Distilled water	10 oz.

No. 2.

Sodium hydrate	80 gr.
Distilled water	10 oz.

For use take equal portions of each. Correct exposure should produce a dense vigorous negative with clear lines that will print well without intensification. If, however, the plate be over-exposed the fine lines and detail will be blocked before sufficient density is attained, under-exposure resulting in a thin weak image lacking vigour. If preferred, pyro may be used, any good formula containing sulphite or metabisulphite being suitable. Amidol also works well with some plates, giving great opacity and clearness. The formula stands as follows:—

Amidol	5 gr.
Sulphite of soda	15 „
Distilled water	1 oz.

With correct exposure development is very short, and density easily obtained.

Whatever form of developer be employed, development should be continued until sufficient density is attained, but the lines should remain clear until the last, and if any sign of veiling appear before sufficient density is obtained, development should be arrested, and the required density subsequently attained by intensification. A small negative of suitable quality having been produced, the slide itself may easily be produced from it by contact printing. For this purpose a slow plate should be chosen, and the exposure effected by artificial light. Ferrous oxalate, on account of its cleanly working and its non-liability to stain the film, will be found to give good results, or hydroquinone may be used. A few recent experiments with Amidol have resulted in some fine slides, the formula given above diluted with half its bulk of water being employed. The exposure must be carefully timed, so that good density may be attained before any veiling or degradation of the lights occurs. If the lines of the drawing or diagram are very fine, and a difficulty is experienced in getting them sufficiently dense, development may be stopped just short of veiling, and after thoroughly fixing and washing, the slide may be bleached with mercury and redeveloped with hydroquinone. In this way slides of the highest quality as regards clearness and vigour may be obtained. It is sometimes necessary to prepare rough diagrammatic slides at short notice, and one method of working is to blacken an ordinary cover glass with opaque varnish, and when dry, scratch out with a fine needle the required outline. Another method was suggested by the Editor to the writer, and consists in drawing the required design upon a piece of finely ground glass, cut to

$3\frac{1}{4}$ by $3\frac{1}{4}$ with a sharply-pointed bromide retouching pencil. We can conceive that this method might prove of great utility for copying drawings or diagrams of small dimensions, by superimposing the ground-glass upon them and tracing their outlines.

(*To be continued.*)

Catalogues.

W. WATSON AND SON, 313, High Holborn, E.C., price 6d.

A well compiled and illustrated catalogue of the specialities of this firm, the Acme, the Premier, and all their other cameras, their lenses, stands, etc. Included, also, are all the necessary requisites for photography in all its branches, both for the amateur and professional.

As to the perfection of workmanship and finish of their cameras, lenses, and optical instruments, the fact that this firm took three highest awards at Chicago World's Fair, the highest obtained by any optician exhibiting, is pretty strong proof.

Reviews.

The Art Annual for 1893. Published by J. S. Virtue and Co., 26, Ivy Lane, Paternoster Row, E.C. Price 2s. 6d.

This, the Christmas number of the *Art Journal*, is, as usual, an excellent number. Devoted to the life-work of Holman Hunt, it gives a valuable and interesting insight into the painter's best known pictures and his life. It is illustrated by two exquisite photogravures of "The Light of the World" and "The Shadow of Death," besides a line engraving of "The Finding of the Saviour in the Temple," each of which is in its way a perfect example of workmanship, and, accompanied by numerous process blocks and the text, the whole is well worth obtaining.

Das Lichpans-Verfahren. By H. Schuberth. Published by A. Hartleben, Wien.

The second edition of this work has just been published, and forms a useful, comprehensive text-book to printing. It treats of albumenised and gelatino-chloride and plain paper for silver printing processes, and then treats fully of all the iron and chromium printing methods. Plain and practical directions are given, and it is evident that the author speaks from practical experience.

Lantern Sermons. Price 3d.

Mr. J. A. Noble, of 5, Bond Place, Leeds, is placing a series of lantern sermons on the market, with slides to illustrate the same. From the one sent us we should think they would prove of decided value for church work, the matter being good, and interspersed with anecdotes.

The Magic Lantern, its Construction and Use. Published by Perken, Son, and Rayment, 99, Hatton Garden, E.C. Price 6d.

The beginner often is at a loss for some plainly-worded note-book as to how to work the lantern, and this little manual will be of great assistance. It is not padded with unnecessary details, but is practical and easy reading. The various forms of lanterns and lights are treated of, and the higher uses to which the lantern can be put are not neglected, and numerous illustrations are included.

Intensity Coils, How Made and How Used. By "Dyer." Published by Perken, Son, and Rayment, 99, Hatton Garden, E.C. Price 1s.

During the winter months many of our readers may desire to experiment with electrical and magnetic apparatus, and this little manual, written by a thorough master of his subject, we can strongly recommend. The language is simple, and the experiments described are interesting. Brief articles are included on the electric light, the telephone, telegraph, etc., and as a first handbook this is well worth reading.

The Photographic Salon closed on Saturday last, the 11th inst. Notice of this was sent us too late to include in our last issue.

Some of our readers will recall the experiments carried out by Mr. C. V. Boys with respect to the photography of flying bullets, in which he was able to show to a general audience the beautiful air-waves as they had been recorded on the photographic plate in the laboratory. Experimenting also with flying bullets, but with quite a different object in view, Messner has been carefully investigating the chances of their carrying infection when purposely infected with particular micro-organisms. Firing the infected bullets at a distance of from 220 to 250 metres into boxes filled with a mixture suitable for the growth of the micro-organisms, it was found that along the passages made by the bullets growths of these organisms had been produced just where contact with the bullet had been originally made. Another modification of the experiment was tried, the boxes, filled as before, being covered with flannel previously infected with particular bacteria and uninfected bullets discharged into them. In this case it was proved by the appearance of the gelatine and the presence of these particular organisms, that the bullets had been the means of their transportation. A third method of discharging ordinary bullets direct into gelatine indicated the presence in the latter of simple moulds and other bacteria usually in the air. The experiments thus point out that the heat of the bullet has no effect on the bacteria on its surface, that clothes are no protection to an infected bullet, and, lastly, that, passing through infected clothes, an uninfected bullet can be the means of carrying the microbes into the wound.—*Ex.*

"Cromwellians" at Blickling.—On Thursday, the 2nd November, a deputation from the Cromwell Photographic Society, Great Yarmouth, paid a visit to Blickling Hall, the residence of the Marchioness of Lothian, for the purpose of presenting her ladyship with a portfolio of views taken by members of the society during their visit to Blickling on June 15th last. The deputation consisted of the Secretary of the society (Mr. Charles Rumbold). Mr. John Starling (Vice-President), and Messrs. Alfred Price and H. E. Hurrell. On their arrival at Blickling Hall the deputation was introduced to her ladyship by Mr. Henry G. Wright, the courteous agent to the Blicking estate; and Mr. Starling, who acted as spokesman to the party, then proceeded to present the fine portfolio of views already mentioned. The pictures included exteriors and interiors of the grand old Elizabethan structure from various points of view, besides choice views of picturesque nooks and corners of the spacious and beautifully laid out parterres and terraces surrounding the hall. The Vice-President having made the presentation and explained the status and objects of the Cromwell Photographic Society, her ladyship gracefully accepted the portfolio of photographs, and expressed herself as highly pleased with them and was agreeably surprised to learn that such excellent work could be turned out by an amateur society. She picked out one or two of the views as exhibiting special excellences, and said that they were at once remarkable and unique, the views in question never having been taken before. Her ladyship also expressed a desire that on some future occasion members of the society would pay a further visit to the hall, and endeavour to get a complete set of views of the fine ceiling in the library and other portions of the building of which pictures had not already been taken. The marchioness then proceeded with much kindness and graceful attention to show the deputation some of the art treasures with which the ancient pile abounds, a superb collection of water-colour drawings by Lady Waterford, sister to her ladyship, calling forth special admiration. Having further interested the party in tapestries, paintings, and other art specimens of the place, her ladyship having again expressed her thanks to the society and to those who had visited Blickling in connection with the presentation, the deputation withdrew, and were entertained to luncheon at the Hall, after which, by the kindness of Mr. Wright, the party were shown over the principal rooms of the hall, including the celebrated gilded State-room used by George II. during his visit to Blickling. The photographs presented to the Marchioness of Lothian consisted of twenty-five pictures from twelve inches by ten inches down to half-plate, and were placed in a handsome portfolio bearing the Yarmouth arms and the name "Cromwell Photographic Society," specially made by Messrs. Diholl and Son, of Yarmouth.

Splashes of Ink.

By Penfeather.

The Committee of the Affiliated Societies have been considering the best means of approaching the railway companies with a view to obtaining a reduction of fares to photographers, and have come to the conclusion that "they are unable to recommend any course which would hold out a reasonable chance of success." That several attempts have already been made in the direction, but without success, is well known.

Those who have the slightest acquaintance with the details of railway management will realise the enormous labour that would be entailed in organising the system that would be required to secure this, doubtless, very desirable end. To mention one only of the difficulties. It would be necessary to keep, at every station, a double set of tickets, one to issue to ordinary passengers, and the other for photographic excursionists; otherwise it would be practically impossible to make up the accounts. With regard to the resolution to petition the companies to allow the journey to be broken at intermediate stations on the line of route there is greater hope. On some of the Continental lines, especially those under the direct control of the State, this privilege is allowed; but, in this case, the best course would be to make an attempt to enlist the sympathies of the general public, for many of those whose pursuits and hobbies lie outside photography would be equally benefited by a removal of the present restrictions in this direction. It is hardly likely that any concessions, such as those asked for, will be made to one class of individuals only, at any rate until more cogent reasons are advanced than those already set forth. If photographers, as a class, were allowed any specially favoured terms, other classes would soon want to know why their claims were to be ignored, and considering that there exists a large number of classes who are quite as much interested in cheap travelling as photographers, and who must use railways under any circumstances, it is obvious that any reduction of travelling expenses to them must mean a reduction of receipts to the railway companies. Therein lies the *crux* of the whole matter. The only argument to use to a railway manager is the solid one of £ s. d. Reasoning on a sentimental or utilitarian ground is of no avail. If photographers can show that in benefiting themselves they are assisting towards an increased percentage of dividend, they may hope to receive a favourable reply to their demands.

I am glad to learn that the Photographic Club has decided to allow its proceedings to be reported. There was a time when one could hardly take up a photographic paper without finding some reference to matters which had occupied the attention of its members at its weekly meetings. Now, possibly because photographic societies have so multiplied, its existence is rarely referred to. Its discussions have been said to be a happy commingling of wit and wisdom. Perhaps in future we shall hear something of the wisdom, if not of the wit.

Every one connected with photography is so well acquainted with Mr. H. P. Robinson through his pictorial and literary works that any writing bearing his signature is sure to be read with interest. His book, "Fictorial Effect in Photography," has deservedly become the text-book on the subject, and even they who are not admirers of his somewhat artificial style will admit that his influence on photography in its connection with art has been, on the whole, a good one. But those who know the individual and his funny little ways will, doubtless, have felt some curiosity as to his object in publishing that extremely and virtuously indignant "epistle to the Bristolians." Such solicitude for the due observance of the edicts of the Photographic Society of Great Britain, as therein expressed, could hardly be the effect of a revulsion of feeling in favour of the society which for the past year or so he seems to have made it his hobby to vilify, and his newly-discovered objection to the system of medals is too un-Robinsonian a sentiment to bear the impression of sincerity. However, we have not had long to wait for a hint towards the solution of the mystery. Mr. F. Bligh Bond, in his reply to Mr. Robinson's letter, writes, "Mr. Robinson appears to have overlooked the paragraphs in our schedule which have placed in the hands of the judges the power of withholding medals and awarding of extra medals at their discretion. We are the more surprised at this as he has exhibited in Bristol previously, and has taken awards, and herein apparently lies the sore point. Let me explain. Mr. Robinson has probably not forgotten some unpleasant correspondence which originated with himself relative to one of his awards, and which if published might interest your readers as throwing light on and giving the reason for his published letter of last week. Will Mr. Robinson oblige?" Of course, Mr. Robinson will at once authorise the publication of this correspondence. No other course is open to him as an honourable and straightforward man.

Developed Gelatino-Chloride Printing-out Paper.*

By Henry Smith.

The following notes on my experiments in exposing and developing gelatino-chloride paper refer, for the sake of simplicity, to amidol alone. The other developers may be dealt with at some future time by myself, or some other of our members may be induced to turn their attention to it, and give us the results they may obtain. The subject is full of interest, and the difficulties surrounding it are but trifling. I prepared a stock solution as follows:—

Hot water	5 oz.
Amidol (Hauff)	20 gr.
Sulphite of soda (Johnson's)	4 drm.
Potassium bromide	20 gr.
Hydrochloric acid	20 drops.

When cool it is ready for use, and is to be diluted with water as required.

By varying the proportions of the solution by the addition of water, in conjunction with the exposure, a variety of tones may be obtained. Thus a short exposure, with a strong solution of amidol, produces dark tones; while a long exposure, followed by a weak solution, gives warmer tones. It will be observed that the solution is distinctly acid and strongly restrained.

Three different tones may be obtained as follows:—Procure a fresh packet of Ilford P.O.P. (I have found that to act best so far), and having selected a good quick-printing negative, take them into the dark-room—for the paper must only be opened in a ruby or orange light. Place the negative in a frame, and insert a sheet of the paper just as carefully as a bromide sheet or lantern plate is dealt with.

The exposure is now to be made by daylight. Expose the first sheet, say for four minutes, and if on returning to the dark room a faint image is visible, remove the print and put another sheet in its place. Let the second exposure be for two minutes, and then follow on with the third, giving it one minute. Mark the time of each exposure on the back of the sheets with a soft blacklead while they are in the frame. This will save confusion.

To develop take—

Stock solution	1 oz.
Water	1 „

First soak the sheet that has received one minute's exposure in a weak acid-water bath (two drops of hydrochloric acid to the pint of water), and then immerse in the above developing solution. If the paper begins to darken where there has been no exposure, it is an evidence of under-exposure. If the exposure has been right it will commence to develop very slowly. When complete, pass it direct into the fixing bath—hypo (saturated solution) 1 ounce, water 3 ounces. Over-development will produce a veil on the surface of the paper. When this is seen, the print must be placed at once in the fixing bath, and must remain there until it is removed. This may require half an hour or so. Keep the print face down in the fixing bath.

Now treat the second and third prints in the same way, using the same developing solution, etc.

If all has gone on right we should have three prints, exhibiting three different tones. The one that has received one minute exposure should be of a black tone, the two minutes' exposure should be a warm sepia brown, and the four minutes' exposure should be a light sepia approaching to red.

I have also been able to obtain very good results with the following combined developing agents:—

Amidol	3 parts and pyro 1 part.
Amidol	3 „ „ metol 1 „
Amidol	3 „ „ glycin 1 „

Any of these may be employed without using an aecelerator, but if development requires to be hastened, a few drops of a 10 per cent. solution of carbonate of potass or carbonate of soda will accomplish it.

The stock solution of acid-amidol I have already given makes a very good developer when reduced to half strength for the Nikko paper just introduced by the Eastman Co. A good printing negative will require from ten to twenty seconds' exposure at one foot from the gas.

Tunbridge Wells.—A meeting was held on the 2nd inst. Mr. E. R. Ashton in the chair. Mr. H. P. Robinson had accepted an invitation to be present, and, through the kindness of Messrs. Fuerst Bros., Mr. E. L. Morgan was announced to give a demonstration with the new developers Metol and Glycin. Numerous examples of work by all developers were shown, and their action explained and demonstrated.

* From the *Photographic Record*, the organ of the Manchester Am. Phot. Soc.

A "Copying" Adventure.

BY DUNCAN MACDUFF.

SOME time ago a photograph was sent me by my brother in Florida with a reqnest that I would make a number of copies from it for distribution among our relatives and friends. It was a view of his home, a wood-built house, with a background of trees and undergrowth, and a foreground of land cleared for cultivation. The print was nearly 12 by 10 in. in size. As my photographic kit is only available up to the modest half-plate, my first idea was to get our local photographer to do the work for me, or, at least, to supply me with a negative the same size as the original; but on interviewing this gentleman on the subject, he at first declined to undertake the job at all, alleging as his reason that it would be impossible to make a good copy from so defective a print, and finally asked a price that was entirely prohibitive. In truth, his objection was not ill-founded, for it was but a sorry specimen of photography. The plate had evidently been under-exposed, badly developed, and, to make matters worse, a flare-spot of some 3 inches in diameter was a marked feature in it, which settled any claim to pictorial effect which it might otherwise have had. The print lay about for some time, pricking my conscience every time it met my eye, until one evening I happened to hold it up to the lamp, and looking through it, I found the effect was not nearly so bad as by reflected light. As is the case with all albumen prints and many other kinds, shadows, which when viewed in the usual way appear but masses of black, now showed considerable detail, and, the substance of the paper acting as a diffusing medium, excess of contrast was very much reduced. There was of course, the grain of the paper, but this, I thought, was not much more apparent than would occur in a copy made by means of the camera. After consideration I determined to attempt to gain my end without the intervention of the camera at all, using the print as a *transparency* from which to obtain a negative; and as the results of my efforts far exceeded my utmost expectations. I venture to describe the method by which I obtained them in the hope that others may benefit by my experience.

One piece of apparatus was obviously necessary, a printing frame with a stout glass and sufficiently large to take the print. This I had decided to order from my old friend, George Mason, of Glasgow. I found, however, that I had a well-made oak picture frame 13 by 10 in dimensions, made of two-inch moulding, and provided with a good glass, which, with a little ingenuity could be adapted for the purpose required. I need not give minute details of how this was done, except to say that in making the back the usual hinges were dispensed with, and that I provided a good pad of stout carpet felt to ensure absolute contact. In place of the springs, two strips of wood were screwed across the frame, and the requisite pressure was obtained by means of wooden wedges. This arrangement entailed the use of a screw-driver every time the frame was required to be opened—a loss of time—but with this exception the contrivance acted as well as the piece of apparatus specially made for the purpose, which it superseded.

My next care was the improvement of the print, looking at it in the light of a transparency, by spotting and retouching; and here I had the advantage that I was able to work on the back, the plain paper surface allowing of almost unlimited treatment. The print having been made perfectly flat and smooth by ironing between blotting-paper, was worked upon with a stump and powdered black-lead. The harsh glaring lights were modified, the objectionable flare-spot was brought as nearly as possible in tone with the rest of the picture, and the broad expanse of white which represented the sky was toned down and clouds suggested. With a finely-pointed lead pencil detail was strengthened where necessary, and some of the foreground objects which were offensively out of focus were sharpened. This was an afternoon's work, but it was time well spent, for when looked through at this stage the print was hardly recognisable, so much had it been improved.

I had now a paper transparency. It had been my original intention to obtain from this a negative on a gelatine plate by contact printing in the ordinary way in the printing-frame, but as it would have been necessary to obtain at least half a dozen 12 by 10 plates, which meant some days' delay, I determined to try the experiment of making a paper negative. I had the alternative of using for the purpose albumenised paper, gelatino-chloride paper, or bromide paper, all of which were in stock. Having taken into consideration their several advantages and disadvantages, albumenised paper was chosen, at any rate for a trial, its thinness being perhaps its principal recommendation. Accordingly, the transparency was placed in position in the printing-frame, with its back to the glass, and with a piece of sensitised paper behind it. It was then placed in the light to print. Here an unforeseen difficulty arose. The impression was, of course, a negative one, and very extraordinary it looked. No judgment could be formed of whether or not it was sufficiently deeply-printed by looking on its face. Its purpose being for use by transmitted light, by transmitted light it was necessary to judge it. But here, again, want of experience created a difficulty. Did it require to be lightly or fully printed? Without detailing the steps by which this matter was determined, a fully-printed impression—so dark that the shadows (of the impression, representing the lights of the transparency) appeared somewhat blocked—was found to be the best. The negative having been printed and removed from the frame, the question next arose—would it be better to tone it or to fix it without toning? Both systems were tried, but the untoned negative was finally selected for use. There is nothing to note about the fixing; a bath of the ordinary strength was used, after which the print, or rather paper negative, was thoroughly washed and then dried.

A satisfactory negative having been thus obtained, it was treated in a similar manner to that adopted for the original print, that is, it was ironed between blotting paper, and the back worked with the stump and black-lead and with pencil; but in this case it was the more transparent parts of the negative, representing the shadows of the original print, that were amenable to improvement. The too heavy shadows of the foliage were relieved, and the details accentuated. The parts surrounding the flare-spot were strengthened so that its existence was almost wholly disguised, and it was subjected to all those little dodges by which we are accustomed to improve the printing quality of our ordinary negatives, only these could be practised to a far greater extent owing to the facility for working upon afforded by the plain paper.

In the days when paper negatives were in vogue, it was the custom to render them more translucent by saturating the fibre of the paper with wax or some similar substance. This course was not pursued in the case of the original print, for fear that the result of the process which is now being recorded should not prove successful, but in the case of the negative obtained from it the waxing process was resorted to. It is, however, a messy and not an easy job, and subsequent experiments have shown that its principal if not its only value is in shortening the time required for printing, to most of us a matter of comparatively little moment I should never trouble about it again.

The stage was now reached when all that remained was to print the negative—a paper one, it is true, but otherwise not different from those we are accustomed to deal with. A trial print was made on gelatino-chloride and one on albumenised paper, and after being finished they were compared. On the whole the albumenised print appeared the better, and the requisite number of prints was therefore made on albumenised paper. One of these prints, together with the original, is before me as I write. The copy is far the better of the two. The flare-spot has almost entirely disappeared. It wants looking for in the one, but is most disgustingly prominent in the other. There is but little loss of detail, and there is greater harmony. The experienced photographer would no doubt tell at a glance that it was a copy, for the granularity peculiar to most copies is there, but it is not offensive, especially when viewed from a reasonable distance. Had the copy been made upon a matt and rough-surfaced instead of a glossy paper, this would be, no doubt, still less noticeable. I am satisfied with my results, and my most sincere thanks are due to our local photographer, whose want of enterprise has been, unwittingly, the means of saving my pocket, and at the same time adding to my store of experience and teaching me a valuable lesson of self-reliance.

South London.—On 16th ult. the President, F. W. Edwards, in the chair. After the close of the usual formal business, the evening was devoted to the exhibition of slides in the society's lantern, to enable members to select and make up the sets which they intend to send in for competition at the exhibition to be held early in next month. Mr. A. H. Wall and Mr. E. J. Wall were elected honorary members of the society.

North Kent.—The inaugural meeting of the winter session was held on 3rd inst. The Mayor of Gravesend (Mr. G. M. Arnold, D.L., A.C.C.) presided. The President of the Society (Mr. J. C. Johnson, J.P.) delivered a lecture entitled "Photography of the Present Day compared with that of Forty Years Ago," with demonstrations. A flash-light portrait of the Mayor was taken, the plate developed, and a bromide print passed round for inspection before the conclusion of the meeting.

Richmond.—On the 30th ult., Mr. Cembrano in the chair, Mr. Ennis showed a retouching desk which he had made from two picture frames hinged together, the shades being of cardboard. When not in use as a retouching desk it serves its original purpose as a picture frame. Mr. Ardaseer read a paper on "Elementary Optics as Applied to Photography," illustrated by lantern slides which he had prepared from drawings made for the purpose of showing the various points which were fully and lucidly treated of.

Film Working.*

By W. H. Barnes.

In introduction it may be remarked that the celluloid films of to-day are the outcome of various endeavours made to substitute as a support for the sensitive film something lighter than glass and less liable to breakage, and so to reduce the weight of the photographer's outfit. From its special suitability for the purpose, celluloid has come to be almost universally used as a support for the gelatine emulsion in the manufacture of negative films. That it is in all respects as perfect as glass for this purpose can hardly be contended; but it represents our present stage of advancement in this direction.

The exact composition of different makes of celluloid probably varies, but, broadly speaking, the sheet of celluloid as coated (the solvents employed having been evaporated) consists mainly of converted pyroxyline and camphor, both of which are inert to the chemicals used in photography.

It may here be noted, for the benefit of those persons who labour under the impression that all our photographic improvements come from abroad, that the two essential items in the celluloid film are the result of English research and invention, celluloid being due to the late Mr. Parkes, of Birmingham, and gelatino-bromide emulsion to the labour of English experimenters.

Among the principal advantages obtained by using films are the saving effected in weight and bulk—points of great importance, not only to the amateur travelling, but also to the professional photographer doing outdoor work of any kind. The gain on these points is very apparent in the case of magazine hand-cameras, it being possible to carry so many more exposures. A comparison between the weight and bulk of films and plates respectively will illustrate this more freely. A gross of quarter-plates weighs thirteen and a half pounds, while the same quantity of films weighs two pounds one ounce; a gross of half-plates, thirty and a half pounds; films, four and a quarter pounds, in each case inclusive of packages. Again, a gross of plates packed will measure sixteen inches in height, while the same quantity of films measure only four inches, so you see, bulk for bulk, films take only a quarter the space and weigh considerably less than a sixth of the same quantity of plates.

Other points of advantage which films possess are the non-liability to breakage, the small amount of room required for the storage of the negatives, and a lessened tendency to halation.

A considerable amount of want of confidence seems to exist in the minds of many who have tried to make their negatives on films instead of glass in the early days of film photography; some of these defects were, doubtless, defects in the manufacture, due to want of experience in the use of a new material, while other, and perhaps the larger number of failures were due to the fact that the manipulation which answered perfectly with glass plates required to be modified to some extent when using a material of such a different character.

The defects of manufacture have mostly been overcome by improved processes, and very little extra care is required to avoid the defects arising from errors in manipulation.

The question is frequently asked whether films keep as well as glass plates, and I have made many condemnatory remarks concerning films in this respect, not at all justified by my own experience of them. An emulsion which keeps well when coated on glass will, so far as my observation goes, keep equally well on celluloid.

With regard to the suitability of the material, from a chemical point of view, to take the place of glass, I have already stated that the celluloid film is, when the solvents have evaporated, composed of substances which are photographically inert. We know this to be the case as regards the pyroxyline so long used as a vehicle in the wet collodion process. With regard to the camphor, some of which undoubtedly remains in the film, and is supposed to tend to deterioration, with a view to set this matter at rest, I have made a few experiments, of which I now show you the results:—

No. 1 is a plate exposed as taken from the box, without being treated in any way.

No. 2 is a plate from the same box. A slab of camphor three inches square had one face carefully scraped over a straight edge to make it as level as possible. This was pressed closely in contact with the emulsion side of the plate, and allowed to remain in this position for thirty-six hours.

No. 3 is also a plate from the same box. It was placed in a grooved box with a quantity of broken camphor, and left for thirty-six hours.

These plates were all exposed on the same subject, for the same time, and developed together in one dish, and there is no evidence of any effect produced by the camphor.

I have here also some negatives taken on films treated to ascertain the effect of pressure. A packet of six half-plate films in the paper envelopes only were placed in the ordinary letter-copying press, six pennies were laid singly on the package, and the press screwed down very tightly; after thirty-six hours the films were taken out, exposed, and developed, and, although the pressure was sufficient to cause a perfectly glossy circular mark on the face of the film, where the penny had rested, no difference is observable after development.

There is an idea prevalent in the minds of some that an emulsion coated on celluloid is less sensitive than when coated on glass. I frequently try films and glass plates coated with the same emulsion, and do not find this to be the case.

We now come to the question of exposure. Celluloid films may easily be exposed in ordinary dark slides by placing black cardboard of the same size at the back of the film to keep them flat and take the pressure of the spring. This method works well when the rebate of the slide is fairly wide; but with narrow rebates some difficulty arises, and film-carriers to hold the film are certainly more generally convenient. The films should slip quite loosely into the carrier, as, if they fit at all tightly, this causes a buckling of the film and there is also a danger of stripping the emulsion from the celluloid by the sharp edge of the metal grooving. Several patterns of film-carriers are in the market, and which, I dare say, are known to you. I have here one recently introduced by Messrs. B. J. Edwards and Co., which you will see is very simple and can be easily worked by following the directions printed on the back of the card.

In this way films can be worked very conveniently in ordinary slides; but to gain the fullest measure of advantage from their use, slides especially designed for films should be used, as these can be made much lighter and less bulky.

Here is a dark slide specially designed for films, but which can also be used for plates. This, like the film-carrier I have just shown, is the invention of Mr. B. J. Edwards. It will hold two films or plates, and two of these slides take up about the same space as an ordinary wooden one, and weigh considerably less. The shutter is of xylonite, coloured black on one side and red on the other. Black outside indicates unexposed films or plates; this draws right out, and after exposure is replaced, red outwards, which not only shows at a glance exposed and unexposed films or plates, but the red side can be written on with lead pencil, and thus affords space to make memoranda in reference to exposure, etc. Afterwards the writing can be erased with a damp sponge or cloth.

The development of films may be conducted in the same way as plates if it is only required to dry one at a time. It is well, however, to have a full quantity of developer, and the use of a brush to secure the absence of air-bells is certain to be recommended; but, even when developing them singly, films are less convenient to handle than glass plates, and, unless some contrivance is used to prevent them floating over one another, several cannot satisfactorily be developed at once. I have utilised for this purpose the metal frame of the film-carrier I have just shown, after giving it a coat of varnish. The films are simply slipped into the groove, without the card backing, in which they remain during the operations of developing, fixing, washing, and drying. The opening in the frame allows you to judge of density during development.

This is, however, somewhat of a makeshift contrivance, and I hope on a future occasion to be able to show you a more perfect holder which Mr. Edwards has recently designed.

In this way a film becomes as easy to manipulate as a glass plate, and several may be developed at the same time.

Developers.—With respect to the developers most suitable for films, it is best to use the developer with the peculiarities of which you are best acquainted; a developer suitable for plates will answer equally well for films.

Personally I have always given pyro and ammonia the premier position as regards the quality of the negatives obtained.

Pyro and soda has, to a considerable extent, superseded it of late years, but the pyro and soda developing formulæ generally in use appear to me to give negatives lacking something of the quality obtained with pyro and ammonia.

In order to arrive, if possible, at a pyro and soda formula equal to pyro and ammonia, I have recently made a somewhat exhaustive series of trials, with varied proportions of soda and sulphite, in this developer, and have also tried various modifications of it. The following formula is the outcome of these trials, and I believe it to be decidedly superior to those generally in use. It is the only one I have employed that gives negatives quite equal to those developed with pyro and ammonia.

No. 1 Solution.

Pyrogallic acid	1 oz.
Metabisulphite of potassium	1 „
Water	80 „

No. 2 Solution.

Carbonate of soda (crystals)	12 oz.
Water	80 „

* Read before London and Provincial Photographic Association.

No. 3 Solution.

Bromide of potassium	1 oz.
Water	9 oz.

To develop, mix equal parts of Nos. 1 and 2. For most purposes the addition of five minims of No. 3 to each ounce of the mixed developer is recommended (or one and a half ounces of No. 3 may be added to the eighty ounces of No. 2). For instantaneous exposnres, where under-exposure is probable, the bromide may be omitted, and also for studio work. This point as to the addition of bromide, must, in fact, be left to the discretion of the operator.

If the colour of negative given by this developer is not considered grey enough, a greyer image may be obtained by adding two ounces of snlphite of soda to the No. 2 solution.

Fixing.—Very little need be said on this point. If the film negatives are manipulated without holders, it is advisable to fix in a *deep* dish, and to see that the films are well under the surface of the solution, otherwise stains may result. An acid fixing bath may be used; a ready method of mixing this is to add two ounces of metabisulphite of potassium to each pound of hypo crystals. One ounce of the metabisulphite will answer, but I prefer the larger proportion.

Washing.—When a holder is not used, it is best, in placing the films in the washing tank, to place two back to back in one groove.

Drying.—After washing, they are best hung np to dry by means of spring clips; the clips answer very well. The method of hastening the drying of negatives by immersing them in alcohol must not be practised with film negatives, as the alcohol attacks the celluloid.

Varnishing.—It is certainly advisable to varnish the film negatives, and this can be readily accomplished by means of this varnish, which is specially prepared for the purpose. Some of the varnish is poured into a dish, and the film is immersed for one or two minutes, and then hung np for the varnish to dry and harden; no warming of the negative is required.

Cleaning the Varnish off a Negative.—Should the removal of the varnish from a varnished film negative be necessary for intensification or other purpose, this is best effected by soaking the negative in some of the varnish for five or ten minutes, rubbing the surface with a pledget of cotton-wool, and then well washing it under the tap.

Apparatus.

THE UNA TONING POWDER.

G. WRIGHT AND CO., of Hopwood, Lancashire, have sent us a sample of the above powder, which is intended for gelatino-ehloride printing-out papers and lantern slides.

It is very simple to use, and in our hands has given very good tones, ranging from brown to rich purple. The directions are:—Dissolve 2 drm. of hyposulphite of soda in about 7 oz. of water, and add 30 gr. of Una. When the latter is dissolved, immerse the prints (without previous washing) face downwards, and keep moving for five to seven minutes. By this time they will have assumed an orange-brown to chocolate-brown tone, when they should be removed from the bath and the surface of the prints either sponged with a soft sponge charged with water, or the finger passed over the film to remove any deposit that may be adhering, and then washed thoroughly for half an-hour (at first in many changes of water). When dried they will become a rich purple in tone, and can be afterwards glazed or matted if required. It is almost impossible to fail in getting the most beautiful results, but it is necessary to print rather heavily. If the print is too warm when dry, it can be easily re-toned by again entering into the toning bath. It is better to let the water run a few minutes before making the solutions. Price 1s. per bottle, which is sufficient to tone a very large number, about 1,000 quarter-plate prints.

BARNET LANTERN TRANSPARENCY PLATE.

Elliott and Son, of Barnet, Herts, have sent us some samples of the above new plate which, judging from our own trials and the samples of work we have seen on these plates, will be found to answer every requirement, giving both cold or warm tones, with a delicacy and brilliancy which leave nothing to be desired.

The following are the particnlar directions of the makers, although we have obtained good results with our stock pyro developer. The latitude in exposure is very wide, warmer tones only being obtained with increased exposure.

CONTACT PRINTING.—For black tones the exposure required is about ten seconds at a distance of 1 ft. from an ordinary gas flames the developer to be used is either No. 1 or 2. To secure warm tone it is necessary to increase the exposure to two or three minutes and use formula either No. 3 or 4. To obtain still warmer (reddish) tones increase the exposure still further to five or six minutes and develop with formula No. 5.

REDUCTIONS IN THE CAMERA.—For black tones with stop *f*/16 in bright diffused light from a half-plate negative an exposure of about ten seconds is required, using formula No. 1 or 2 for developing. For warm tones increase the exposure to two or three minutes and using for developer either formula No. 3 or 4. For still warmer tones further increase the exposure to five or six minutes and develop with formula No. 5.

FORMULÆ FOR DEVELOPERS.

NOTE.—In cold weather all solutions should be raised to a temperature of 60°.

COLD BLACK TONES.

No. 1.

(A) Metol	400 gr.
Soda sulphite	8 oz.
Water	80 „
(B) Carbonate of potash	1,200 gr.
Ammonium bromide	240 „
Potassium bromide	480 „
Water	80 oz.

Take equal parts of A and B.

NOTE.—The ammonium bromide is necessary for the production of absolutely cold blacktones; a larger quantityis not recommended, as it tends to produce a slight veil in the high lights. Length of time in developing, about 2 minutes.

WARM BLACK TONES.

No. 2.

(A) Hydrokinone	640 gr.
Soda sulphite	8 oz.
Potass. bromide	120 gr.
Water	80 oz.
(B) Sodium hydrate	640 gr.
Water	80 oz.

Take equal parts of A and B.

This produces a very pleasing warm black. Length of time in developing, about 2 minutes.

WARM BROWN TONES.

No. 3.

(A) Pyro	1 oz.
Soda sulphite	4 „
Water	80 „
(B) Carbonate of ammonia	900 gr.
Potass. hydrate	750 „
Ammonium bromide	600 „
Water	80 oz.

Take equal parts of A and B.

Length of time in developing, about 2 minutes.

Or the following may be used—

No. 4.

Take equal parts of No. 2 formula and add to each ounce 3 gr. carbonate of ammonia and 3 gr. of ammonium bromide.

Length of time in developing, about 3 or 4 minutes.

No. 5. VERY WARM (REDDISH) TONES.

Take equal parts of No. 2 formula aud add to each ounce 6 grains of carbonate of ammonia and 6 grains ammonium bromide.

Length of time in developing, about 8 minutes.

FIXING BATH.

We recommend the bath not to be made stronger than—

Hypo	5 oz.
Water	20 „

Clearing solutions will not be found necessary with these plates.

DR. ANDRESEN'S FIXING SALT.

Messrs. Schwarz and Co., of 9, New Broad Street, E.C., have sent us a sample bar of the above, which is extremely convenient and portable. The advantages of this salt are that it dissolves very readily, forming an acid fixing bath which keeps well and hardens the gelatine, and at the same time clears the film from stain.

The bars are sent out weighing 4 oz. and 16 oz., which have to be dissolved in 40 and 160 oz. of water respectively.

Gosport.—A meeting was held on 8th inst., when an exhibition of the No. 2 set of the 1893 National Lantern Competition Slides was much appreciated, especially the architectural studies, by a numerous audience.

Societies' Notes.

Death of Mr. Thomas Mayne.—We learn with great regret of the death of Mr. Thomas S. Mayne, which occurred at his residence, St. Hilary Brow, Wallasey, on 9th inst. He was for a number of years connected with the corn trade in Belfast and in Liverpool, but about two years ago he entered the service of the Pioneer Insurance Company. He held that position up to a week or two ago, when he received a lucrative appointment in an American Insurance Company. His health giving way, however, he was destined never to enter upon his new duties, which were to have been commenced on the 1st of this month. He was an enthusiastic and very successful amateur photographer, and was prominently connected with the International Liverpool Photographic Exhibitions of 1888 and '91. He had a wide circle of friends, who will sincerely mourn his untimely end.

At the annual general meeting of the St. Bartholomew Hospital Photographic Society, the following officers for the ensuing year were elected:—President, Dr. W. J. Russell, F.R.S.; Vice Presidents, Dr. H. Lewis Jones, Mr. Wormack; Hon. Secs., Mr. D. W. Collings, Mr. J. Hussey; additional Committeemen, Mr. G. A. C. Calvert, Mr. S. E. Gill, and Mr. W. B. Jones.

The exhibition of the Shaw Church Institute Photographic Society closed on Saturday last after a very successful week. Lectures were given each evening, all of which were very well attended. There were about 140 exhibits, the following being a list of awards:—Class 1: No. 99, silver medal, T. Heywood, Oldham; No. 80, bronze medal, S. L. Coulthurst, Manchester. Class 2: silver medal, not awarded; No. 87, bronze medal, Rev. E. E. Goodacre, B.A., Edgworth, near Bolton. Class 3: set No. 5, bronze medal, T. Widdop, Oldham; best photograph, silver medal, "Richmond-on-Thames," T. Heywood, Oldham. Judges, Rev. H. J. Palmer, M.A., Ashton, Mr. J. W. Wade, Manchester.

A Photographic Society has just been started for Barnsley and district, and meetings are to be held monthly at Mr. Tomlin's, Chemist's, Town End, who has kindly placed a room at the disposal of the members. All photographers of the town or district are urgently invited to join at once. The subscription *now* is 2s. 6d. C. R. Barham, Hon. Sec. and Treasurer, 9, Corporation Street, Barnsley.

The Cheetham Photographic Society is now defunct.

The following are the awards at the East London Photographic Society Exhibition. Class 1, Members' landscapes, seascape and river scenery: No. 28, "Inlet from the River Lea," C. Tylee, first; Nos. 69, "Connaught Waters," by G. S. Pascoe, and 73, "A Shady Glen," by R. Barber, equal for second place; no third award. Class B, members' portraits, etc.; No. 135, "A Juvenile Treat," by C. Tylee, first; No. 156, "Playmates," by C. Tylee, second; No. 130, "Forty Winks," by G. E. Bennett, third. Class C, members' architecture: no first or third awards; Nos. 189, "The Font, Lichfield," by C. N. Mead, and 202, "Nether Hall," by A. G. Cooke, equal seconds. Class D, outing pictures: Nos 229, "Nether Hall," A. G. Cooke, and 241 D, "Harvesting," by C. Tylee, bracketed for second; no first or third award. Class E, open: no award. Class F, open lantern slides: No 258, by J. B. Spencer; no first or third award.

The Nottingham Mechanics' Institution Camera Club will hold a competition of members' and survey exhibition work, entries closing on December 1st.

The annual meeting of the Munster Camera Club was held last week, and a very satisfactory report and balance-sheet was read.

The North Middlesex Photographic Society will hold a conversazione and exhibition of members' work at the Jubilee Hall, Hornsey Road, N., on November 28th at 7 p.m.

Oxford University.—A meeting was held on 8th inst. Mr. H. Graves gave a demonstration on "Intensification," and seemed to prefer mercury and sodium sulphite as giving softer negatives. Some carbon pictures by Messrs. Elliott and Son were handed round for inspection at the end of the meeting.

Societies' Meetings.

Aston.—In the course of the practical demonstration on the manipulation of the dry collodion lantern-plate on 3rd inst., Dr. Hill Norris said that exposures were, to his mind, more satisfactory when made to a paraffin lamp, as the variation in the pressure of gas often defied true judgment. The guide given for reduction in the camera was: mid-day, sun shining, facing north light, stop *f*/16, from 30 to 60 seconds. Contact printing was next dealt with, and the recommendation was 10 to 20 seconds at a distance of 2 ft. from a No. 6 batswing. The brilliancy of the slide is, however, always proportionate to the whiteness of the light. The developing should be conducted in a temperature of 60 to 65 deg. F., and should be continued until sufficient density is obtained, which may be judged by observing three rules, viz., (1) till all veil has disappeared; (2) that the image should be black, (3) that it appear dense and black by the transmitted light of the ruby lamp. In cases of over or under exposure the results will be thin and flat. Over-exposure may be remedied by cutting short the development, fixing, washing, and then re-developing with the silver and pyro. The plates must on no account be touched or brushed when wet, but the films are very tough when dry. Dr. Norris then passed round the following formulæ:—

No. 1.

Hydroquinone	160 gr.
Sodium sulphite	2 oz.
Citric acid	60 gr.
Potassic bromide	40 „
Water	20 oz.

No. 2.

Sodium hydrate	100 gr.
Water	20 oz.

Take equal parts of each to develop.

Fixing.

Potassic cyanide	¼ oz.
Water	10 „

Rinse well under tap. Or—

Hyposulphite soda	4 oz.
Water	20 „

After immersion of plate, bring out of room into white light, and wash at once as soon as all unaltered silver bromide has gone from film. If No. 2 is used more washing is required.

Re-developer.

Pyrogallic acid	10 gr.
Citric acid	25 „
Water	2 oz.
Silver nitrate	20 gr.
Distilled water	2 oz.

To ½ oz. of No. 1 add 30 drops of No. 2.

The Secretary then exhibited a new film slide by Tylar and a magazine camera by Archer and Sons.

Brixton and Clapham.—On 7th inst. the club settled details with respect to the forthcoming exhibition, which will be held at the Clarence Room, Coldharbour Lane, Brixton, from Thursday, January 25th, to Wednesday, January 31st, 1894, both days inclusive. There will be no open class, and prints will not be divided into classes as on former occasions. Subsequently a paper was read, and a demonstration on enlarging given by Mr. Butler. An enlargement 12 by 10 in. was successfully made from a half-plate negative on Morgan and Kidd's bromide paper, being developed with the following formula:—Amidol 2 gr., sulphite soda 24 gr., bromide potassium 1 gr., water 1 oz.

Croydon (Micro.).—On 3rd inst., "Paget Printing-out Lantern Plates and Opals," by Mr. S. H. Fry; Mr. J. Weir Brown in the chair. Mr. Fry confined his remarks and demonstration to the lantern plates, stating, however, that the treatment of the opals and the P.O.P. was practically the same. The image on these plates partook more of the nature of a stain, and density was easily obtainable without blocking up the shadows. There was no difficulty in printing them in an ordinary printing frame, being sufficiently printed when, on looking through from the back, they had a reddish appearance all over; if found over-printed they could be reduced in a weak 2 gr. cyanide bath. Mr. Fry then proceeded to develop two partly printed plates. Stress was laid on the thorough "bromising" and washing before being placed in the developer. He preferred the hydroquinone developer as given for the P.O.P., diluted, however with an equal quantity of water, as it was more easy to wash the developer out before toning, and unless this was done the gold in the presence of hydroquinone acted as an intensifier, and produced an enormous density, whilst toning was very slow. After development the plates were toned and fixed in a combined bath. The appearance of the resulting slides was greatly admired by the members, as also were a number of finished slides which were shown.

Ealing.—Meeting on 2nd inst. Messrs. Roland Whiting and T. Stephenson elected members, and the Rev. E. Jarvis nominated. A set of lantern slides illustrative of Yorkshire scenery, contributed by the Leeds Society to the affiliation scheme, was shown. The remains of the once splendid abbeys in which Yorkshire is so rich were well represented, the slides including views of Bolton, Kirkstall, Rievaulx, Whitby, and Fountains Abbeys. At the termination of the lantern display an adjournment was made to the dark-room to inspect the enlarging apparatus which is in process of construction from designs by, and under the superintendence of, Mr. Charles Whiting.

Hackney.—On 7th inst. Mr. T. H. Smith in the chair, the following work was shown by members: Mr. Gosling, some hand-camera shots; negative and print by Mr. Farmer; and photos of pen and ink sketches by Mr. Beckett on argentotype paper, developed with amidol, showing what an intense black this developer will give, with a freedom from stains. Mr. Hudson showed a frame for enlarging portion of a quarter-plate negative with four-inch condenser of optical lantern, which had springs for holding the negative perfectly vertical during exposure. Samples of Elliott and Son's Barnet lantern plate were distributed amongst the members, reports to be lodged at a subsequent meeting. A discussion upon exhibition matters brought the evening to a close.

Leeds.—At meeting held on 2nd inst., Mr J. H. Walker in the chair, a paper was read by Mr. B. A. Burrell, F.I.C., on "Messrs. Lumiere's Process of Cobalt Printing." The process is of recent origin, the first notice of it appearing in the *Comptes Rendus*, June, 1893. The method is based upon the unstable nature of the cobaltic salts, and their conversion into cobaltous salts by the action of light. The formation of cobaltous and cobaltic hydroxides was shown, the latter being formed by the action of sodium peroxide (N_2O_2) on a solution of cobaltous sulpbate ($COSO_4 7H_2O$). The sodium peroxide requires to be dissolved in water with care, otherwise great heat is evolved, and decomposition ensues into sodic hydrate and free oxygen. After precipitating, the cobaltic hydroxide requires careful washing to free it from the sodic sulphate formed during the reaction; it is then dissolved by the means of a saturated solution of oxalic acid (1 part in 10·5 parts of water). The method of calculating the amount of cobaltic hydroxide ($CO_2H_6O_6$) formed from a given quantity of cobaltous sulphate was described, as it is important not to add an excess of oxalic acid. The oxalic acid solution is allowed to react upon the moist cobaltic hydroxide for about three hours in the dark, the mixture kept well cooled. The resulting cobaltic oxalate is of a dark green colour, and is used at once to sensitise the gelatine paper. This is done in the usual way, and after drying, the paper is used for printing under a negative. When exposed to light under these conditions, the parts acted upon lose their green colour, being converted into a pale-rose colour, owing to the formation of cobaltous oxalate—a substance but slightly soluble in water. The print now requires developing, this being done by means of a five per cent. solution of potassium ferricyanide, leaving untouched the cobaltic oxalate still remaining in the print. The resulting prints, which are of a deeper rose colour, require thorough washing (about half an hour in running water), in order to wash out all traces of unaltered cobaltic oxalate. When this is effected, the prints are put into a dilute solution of ammonia sulphide, and allowed to remain for varying time, depending on the desired tone, a short time for sepia tone, and a lengthened period for black tones; any desired tone being obtainable, depending on the time of immersion. The prints should be washed for a few minutes and dried. The image consists of sulphide of cobalt, and is almost as permanent as one composed of platinum. The process possesses the following advantages: (1) its extreme cheapness, (2) the short time required for washing, (3) the absence of toning, and short time for printing, (4) the great permanency of the prints; whilst its disadvantages are (1) having to prepare one's own paper (at present none is in the market suitable), and to sensitise it, and using it almost as soon as it is dry, as it rapidly deteriorates. Specimens of the sensitised paper and prints in the various stages of development were shown, and several prints were developed.

Liverpool (A. P. A.)—A practical demonstration on lantern-slide making was given on 2nd inst. by Mr. G. A. Carruthers and Mr. Harry Holt. *Reduction by daylight.*—Mr. Holt pointed out that the first thing to do was to settle down to one make of plate and thoroughly master the manipulation of that. Each brand had some special feature which required a little practice to understand. The reducing camera which gave the best results in his opinion was the Pearson and Denham, both for simplicity of working and compactness. When once the focus was ascertained for the different sizes of negative, these should be accurately marked on the baseboard of the camera. Nearly all of his slides were from whole-plate negatives, and he found the exposure was to judge by the light at the time, and the question if it was necessary to use a small stop was an open one. He was inclined to say that it did not improve and make the slide sharper; it was only a question of seconds; that it was best to err on the safe side, using a sheet of ground glass in front of negative. This is only necessary when the camera is not pointed direct to the sky, but is absolutely necessary if trees or buildings are in the way of direct light. North light, if possible. As a standard for the time of the year, using a Mawson plate (really a very quick brand), reduction from whole-plate, *f*/22, one minute's exposure was found to be the correct exposure, using a fair negative, full of detail, but not over-dense. Hydroquinone he considered the standard developer for transparency work, and the same solution could be used for several plates. After answering several questions, Mr. Holt concluded by explaining the method of putting in clouds, as follows:—Clear the sky off the slide with ferridcyanide of potash, a few drops of a saturated solution in two ounces of hypo, and use a very fine camel's-hair brush, then expose another plate for the cloud only from opposite corners. After the cloud is developed place the slide and the clouds film to film, say about half an inch apart, and trace the outline of the picture of the glass side of the cloud slide, then clear with the brush, wash well, and use cloud as cover glass. Mr. Carruthers followed, generally agreeing with what Mr. Holt had said, but pointed out the great difficulty experienced by the average amateur in finding time to make slides by daylight. Where it could he done he strongly recommended it, but with the present speed of lantern plates it required very little practice to get good results by artificial light, his plan of working being very simple, using a Pearson and Denham's reducing camera. It is a very easy matter to focus; a candle close up to the negative is quite sufficient. A sheet of ground-glass between the negative and the light is necessary. Close up to the negative is the best. About 9 to 12 in. of magnesium ribbon, held about a foot from the negative, taking care to keep the light moving about right and left, up and down, so that you get an equal illumination all over the negative. For weak negatives England's rapid chloride will require about the same exposure. The lecturer rather emphasised the use of fresh hypo; also the spotting of negative and slide, and the introduction of suitable clouds. This appeared to be a simple matter in experienced hands, and success can only be obtained after a little practice. Mr. Carruthers also gave a lot of useful hints about chloride slides by contact, explaining that full exposure will develop warm tones. These can be toned any time after fixing, a good bath being the P.O.P. toning bath, and gradually go cold, finishing up with blue. A lot of excellent slides were passed through the lantern, showing the most suitable tone; also a few words on masks.

London and Provincial.—Mr. A. Haddon in the chair, on 27th ult. Mr. Beckett showed a P.O.P. print developed by the Paget formula. Mr. Wall stated he had used it with success for a number of prints, and thought it would be very valuable for professionals, as there was an immense saving of time; and stated that it was absolutely essential not to develop too far, and to thoroughly remove the developer by well washing. Mr. T. Bolas' paper on "Aluminium Flashlight" was then read by the Secretary. "Aluminium has a much higher kindling point than magnesium, and, consequently, when aluminium filings are blown or dusted through an ordinary flame, they do not ignite, as they are not in the flames sufficiently long to be heated through. Again, aluminium, if heated in a crucible to a white heat, scarcely oxidises, as the metal does not boil at this temperature, and a very thin film of oxide protects the surface. Magnesium would boil and blaze in a white-hot crucible, as the vapour would burn. If, however, we take the fine powder of aluminium, now so largely sold as a 'silver' bronze, and blow or dust this through a flame, it becomes heated to the igniting point, and, weight for weight, yields a more powerful light than magnesium. The commercial aluminium bronze powders contain, however, a trace of greasy material which prevents the grains readily separating, and, if the powder contaminated with grease is blown through a flame, or used in an ordinary flash lamp, it tends to blow through in clots, and a large proportion escapes combustion. This grease may be driven off or destroyed by heating the bronze powder to about the melting point of zinc; and, for operating on a small scale, it is sufficient to heat it in a test tube over a spirit lamp The powder which I bring before you to-night has been thus heated, and it is readily blown about by the slightest breath. It ignites readily, and burns completely when used in an ordinary flash lamp; indeed, it burns more completely than does magnesium dust, as it is impracticable to use magnesium in an extremely fine state of division, owing to its tendency to oxidise spontaneously. Aluminium, on the other hand, can be stored in a minutely fine state of division without fear of deterioration by oxidation. One incidental advantage of aluminium over magnesium is the non-irritating character of the fumes of oxide; magnesium, on the other hand, being an irritating alkaline earth. The sample of aluminium powder before you consists of scales about a five-thousandth of an inch thick, and it is manufactured in Germany.

Woodford.—Ordinary meeting on 2nd, the President, Mr. H. Wilmer, in the chair. Paper by Mr. H. Crouch on "Lenses." The lecturer said that his subject was not to give information that could be found in any elementary text-book, but rather to give reasons for lenses taking certain forms, and show the advantages that different types had for special work. Specimens of Jena glass, grinding tools, and lenses in different stages of manufacture were shown, among others the two elements of a single lens not cemented together, so that the surfaces that would be cemented when finished could be seen, the curves and the reasons for the form of the two elements being explained with black-board diagrams. It was stated that the exterior surface of the lens controls its whole character, and that flare spot, which is rarely seen in modern lenses, could always be cured by altering the position of the stop.

SOCIETIES' FIXTURES.

Nov. 16.—PAISLEY—South African Lantern Slides.
" 16.—PUTNEY—"Unconventional Printing Methods," Mr. S. Herbert Fry.
" 16.—ASTON—"With Hand and Stand in North Wales," Hill Norris, M.D.
" 16.—LIVERPOOL.—Lecture, "Hand-Camera Work, with special reference to the Frena System," by F. O. Bynoe.
Nov. 16.—HULL—Amidol Demonstration, Messrs. Fuerst.
" 16.—BRADFORD—Exhibition of Members' Work, Prints, etc.
" 17.—LEWISHAM—Exhibition of Members' Work.
" 17.—HOLBORN—W. E. Debenham will Lecture and Demonstrate on "Wet Collodion."
" 17.—LEEDS (Y.M.C.A.)—"Lantern Slide Making," Mr. Godfrey Bingley.
" 20.—WOOLWICH POLYTECHNIC—"Carbon Process," Autotype Company.
" 20.—RICHMOND—Specimen Slides, Messrs Birt Acres and J. B. B. Wellington.
" 21.—HACKNEY—Lantern Night, "The Forth Bridge," J. Rennie.
" 21.—NEWCASTLE-ON-TYNE—Exhibition of the National Prize Slides.
" 21.—W. LONDON—Technical Meeting.
" 21.—BRIXTON AND CLAPHAM—"Skies," Mr. W. Thomas.
" 22.—WIDNES—Open.
" 22.—PHOTOGRAPHIC CLUB—Smoking Concert.
" 22.—ASHTON-UNDER-LYNE—"Micro-Photography," Mr. W. Moss.
" 22.—GOSPORT—Members' Lantern Night.
" 23.—TOOTING—"Double Printing," Mr. Child.
" 23.—LIVERPOOL—"Paget Co.'s P.O.P. Toning and Finishing; also Special Remarks and Practical Demonstration, and Part P.O. and Part Development of Image," Mr. S. H. Fry.
" 23.—HULL—"Flash-Light Experiments," Mr. J. Pyhus.
" 23.—LEEDS—Demonstration, "Lantern-Slide Making by Reduction."
" 23—LIVERPOOL (Camera Club)—Exhibition of Members' Lantern Slides.
" 23.—WOOLWICH—"Cresco Fylma," Mr. A. Hill.
" 24.—SUTTON—"Enlarging and Reducing," W. Griffiths.
" 24.—HOLBORN—Lantern Night.
" 25.—HUDDERSFIELD—Photographic Exhibition of Members' Work, "History of the British Flora," A. W. Sykes.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6172. **Exchange of Lantern Slides.**—Will any brother amateur exchange some lantern slides with me? I don't mind what subjects. I have some of various parts of England, and would send a list to anyone willing to exchange. Address—J. LAXTON, "Northcote," Redbourn, Herts.

6173. **Nickel-plating.**—Will anyone give me a formula for nickel-plating?—T. B.

QUERIES UNANSWERED

Aug. 25.—No. 6155.
Sept. 1.—Noe. 6158, 6159, 6160.
" 22.—No. 6161.
" 29.—No. 6162.
Oct. 6.—No. 6163,
" 13.—No. 6164.
" 27.—Nos. 6168, 6169.

EDITORIAL.

SPECIAL NOTICE.—*We are very pleased to find that replies in this column are so much appreciated, but we should be very grateful if those requiring advice would send their letters to us* BEFORE TUESDAY MORNING'S *post if possible. The time occupied in replying in this column is very considerable, and owing to the often late receipt of letters, many matters have to be left over each week. This we much regret.*—ED. AM. PHOTO,

J. B.—Yes; all the others may be used in the same way.

A. M. says: (A) His water supply is not unlimited. Is there a washer cheap and reliable which does not require much water? If changing will do instead of washing, what amount of changing should suffices. Would eight changes in 48 hours do? Eight changes would certainly do—do altogether for prints, and in hot weather for negatives also. Negatives and prints want to be made of cast-iron to stand such washing. If the negatives or prints are supported singly in water, so that there is a very fair depth, say, 3 in. of water under them, they will be well washed in twelve changes in two hours. (B) Can one "spur" the ferrous-oxalate developer for bromide enlargements? No, not without getting degradation of the whites. Hyposulphite of soda in the proportion of 1 part to 5,000 of developer has been suggested, but in our experience it is always at the expense of the purity of the whites. (C) Is backing advisable for subjects other than interiors; if so, what is a clean and easy way, and where are materials to be procured? Backing should always be used both for exterior and interior photography, the only case when not necessary, probably, being for studio work. There are two methods of backing—one with the aid of ready-gummed non-actinic paper, which can be had from Wheeler and Co., King Street, Manchester, and other firms; and another with the aid of caramel and burnt sienna, and this is put on the market by T. H. Powell, of Denmark Hill. We use both, giving the plates a coating with caramel, and not troubling to dry them, lay them down on the gummed red paper, when they may be put into the dark slide. (D) No, they do not give such a high polish. (C) Try Fallowfield's revolving lamp, but there are so many in the market. Could you not rig a lamp up outside your dark-room and use coloured screens? Safeness is merely a question then of the number of thicknesses of coloured material and distance from light.

W. J. BOWESMAN.—(1) Slight sign of movement, could not be used for lantern slides; print over-printed, and has yellow whites. (2) Under-exposed, negative too hard. A rapid plate would give the best lantern-slide. (3) Too much foreground, and not enough sky, has been printed in the sun; would make a good slide, though. (4) Spoilt by the background, and the yellowness of whitee. Hubert's "Art of Retouching," price 1s., from our publishers.

T. R. THOMPSON.—Get a T.T.; this will answer every purpose.

H. C.—(1) This is the usual view, and probably the least satisfactory in the china. We hardly think the figures necessary, otherwise we have no fault to find. (2) Over-printed, otherwise good. (3) Horizon not straight, negative too thin, wants intensifying, and print flat and poor. (4) Your negative is somewhat flat; we think it is possible to get rather more brilliant results from the paper than you have, but generally the prints look sunken in and heavy in shadows. (5) There is a nasty dark mark across the right of this print, and we should have cut out the foreground and put on more sky with some clouds. (6) Flat and poor, negative too thin, and wants intensifying. A very good formula for snap-shot work is the metol developer.

	A.	
Metol		10 gr.
Sodium sulphite		50 "
Water		1 oz.
	B.	
Carbonate of potash		10 gr.
Water		1 oz.

Mix in equal parts.

F. S. says: When using a half plate lens on a quarter-plate will it not be necessary to reduce the exposure, not only because of using it at a larger aperture, but because of using the centre of the field only? Is there not a considerable falling off of light towards the edges of the field? Certainly there is a considerable falling off towards the edges of the plate, but we may be pardoned if we decline to calculate what the necessary reduction of exposure is when using only the centre of the field, because it would necessitate knowing exactly what was going to be taken and then measuring the angle which the several rays from the several parts of the object formed with the axis of the lens. We, therefore, leave this task to our correspondent, but can assure him that there is a decrease in brilliancy for every five degrees from the axis, which we give him, but to be correct it would be necessary to calculate the falling off for every degree or part of a degree, and, unfortunately, life is too short. It may be safely assumed that the reduction of exposure is dependent solely on ratio aperture.

ANGLE.	BRIGHTNESS OF FIELD.	ANGLE.	BRIGHTNESS OF FIELD.
0	1·00	30	0·56
5	0·98	35	0·45
10	0·94	40	0·34
15	0·87	45	0·25
20	0·78	50	0·17
25	0·67	60	0·11

CRYSTAL.—"Please give brief directions for crystoleum painting, as I wish to apply this process to make lamp shades." We are sorry we cannot do more than give outlines. Unmounted albumen prints or, probably, also gelatino-chloride prints could be used, should be soaked in water and then in a tepid solution of gelatine 20 gr., water 1 oz, and laid on the glass and squeegeed into contact, or, if the glasses are not straight, rub all the air bubbles carefully out, allow to dry, and then rub all the paper off the back with No. 0 glass paper. One must be careful not to rub the albumen or gelatine off. Then soak the image on the glass in Canada balsam ½ oz, solid paraffin 1 oz., white wax 1 oz. This mixture should be kept liquid by placing in hot water, but as low a temperature as possible must be used. When the print is transparent, take it out, wipe off the excess, and let it dry. Now on the back paint all the delicate parts first, using small tube oil colours, such as yellow ochre, chrome yellow, vandyke brown, vermilion, crimson lake, French blue, black, zinc white and Vandyke brown, using poppy oil and turpentine as mediums. When the colours are thoroughly set, which takes some time, place a sheet of thin celluloid over them and lay on the body colours thick and strong on this, and, when dry, mount with ground-glass or opal. There is a small work, published by the Crystoleum Company, of Oxford Street, on the subject, but it is principally a matter of artistic taste and skill. (2) Are such pictures permanent? We hardly like to commit ourselves, but we have a frame of six made nearly ten years ago, and four out of the six are perfect, the other two have now small fissures and cracks in the picture, which are unsightly.

MICROFILE says: Please give me some idea of the exposures necessary for photomicrography. This is rather a big order, because no data as to subjects, plate, light, objective, or magnification are given. We can only quote certain cases in which we know all these factors, and must leave our correspondent to ferret the rest out himself. The light used was a paraffin lamp of three-quarter inch circular burner, plates Ilford ordinary. (1) Subject, wasp's head, 1 in. objective, extension of camera 8 in., exposure 6 sec. (2) Gnat's head, ¼ in. objective, camera extension 6 in., exposure 20 sec. (3) Fly's foot, ½ in. objective, extension of camera 2 in., exposure 20 sec. This will give some idea, but experiments are the best.

INSECT asks: What is used for killing moths and butterflies, etc.; is it a white stuff in a bottle? Evidently we are expected to be entomological encyclopedias as well as photographic. It all depends upon what sort of insect it is. If it's a black beetle, a good heavy hook is the best thing, but most entomological death-pots are a mixture of plaster of Paris made into a paste with a concentrated solution of potassium cyanide and poured into a wide-mouthed bottle. This sets hard and continually gives off fumes of prussic or hydrocyanic acid, and if inactive may be renovated by a little weak vinegar and water. We were told this summer that this "death-pot" is the worst that can be used if fine specimens are required, as the rough hard plaster takes off the bloom or feathers. We suggested a hectograph mixture composed of common glue softened in water, and melted in a concentrated solution of cyanide with a little glycerine added, and we have since heard that this answers much better. Frequently a tuft of cotton wool is put into the bottom of the bottle and covered with a sheet of tissue paper, some chloroform being dropped on the wool. This evaporates and kills the poor things, but this is not so lasting as the cyanide. In either case it is not advisable to leave such things about or to let small children get at them, or they may become death-pots to them.

JOHN KIELL.—We are in receipt of your letter, which evidently has been misdirected by you, for if you turn to the last outside page you will find "Communications respecting trade advertisements to be made to Parry and Crawford." Your letter has therefore been handed to them. You have a grievance, and vent your spleen on the Editor, who has absolutely nothing at all to do with it.

PLATO asks what are the best materials or colours for spotting platinotype prints. The best thing would, of course, be platinum black with a little gum water, and the old developer might be used for obtaining this, by boiling with ferrous sulphate, collecting the precipitate, washing with hydrochloric acid and then with water. Indian ink might also be used.

G. C. C.—(1) Flat and over-toned, and we should say it would have been far better to have gone the other side of the trees which now hide the house and church. (2) Very much over-printed and over-toned, and the twigs in foreground should have been cut off. You might cut off half an inch of the print at the bottom without losing anything

J. F. LLOYD.—We can either send you some prints or will criticise prints for you, or both.

K. M. suggests that an easy and cheap method of naming negatives is wanted, and suggests the use of a black or nonactinic pigment which could be transferred from paper. This method is that employed by Mr. Gray, the inventor of "Nameit," who will supply a complete set of type, pigment, etc. The address is 41, Snow Hill, E.C.

BROWN RED asks for a formula for obtaining brown-red tones on Solio paper. We should say that any combined bath would give these tones if the prints were first soaked in salt and water for five minutes before toning, which should not be carried far, merely till the distinct yellow has disappeared from the shadows when looked through and whilst they are still brown.

W. B. H. asks: (1) Given a 10 per cent. solution of potassium bromide, what quantity would represent 80 gr.? This is not difficult to answer.

80 X 10 = 800 minims = 1 oz. 5 drm. 20 minims.

(2) In making lantern slides and developing with hydrokinone, is it necessary to use a clearing bath of alum and citric acid? Either a clearing bath or else an acid fixing bath should be used. If the former, then the developer must be well washed out or else a slimy precipitate will be formed.

A. W. B. has been unfortunate enough to expose a plate through the glass, and noting reply to E. P. V. of last week, asks whether there is no simpler method. No, unless a transparency is made in carbon, and then this used to produce a negative by contact printing. This may be considered easier, but there is sure to be some loss in quality. "In using bichloride of mercury and iodice of potassium I cannot intensify without getting metallic stains." Probably the sole reason lies in the use of iodide. If a little bromide, or preferably chloride, be used and the negatives are well washed after bleaching, metallic stains will be avoided.

JOHN ATKINSON.—The only thing to do is to write the superintendent of police at Douglas and tell him your trouble and he will at once call upon your professional friend and make him disgorge either the money or photos.

J. OHELLEM.—Both prints you send are too hard and chalky. Probably the negatives are somewhat of that character. If it was not for the leaves one would imagine always that they were taken in the depth of winter. They want printing more and not quite such deep toning. Enlarged, of course, on bromide paper, this hardness would not probably show. As examples of work with hand-camera they are distinctly good.

H. N. COOPER.—We will let you off this time, but please mark properly. Certificate comes on this week.

J. KENTISH.—(1) We should have rather seen this the other way of the plate so as to give one an idea of the tall narrow pines, and we should have cut out the big trunk on the right altogether. (2) Over-printed and too muddy, no principal object. (3) Too black in the middle. (4) Over-printed enormously. (5) Ditto (6) Over-printed, and over-toned in an old and dirty bath, we should say. (7) Ditto. No these are not up to the standard technically. They might possibly if printed on rough paper with a little more care.

J. C. N.—(1) Fearfully over-printed, an inch too much foreground. (2) Ditto. (3) Over-printed. (4) Ditto, and too much foreground. (5) slightly better, but this is over-printed too. (6) Ditto. (7) Ditto. (8) This is better. It's not quite so badly over-printed. (9) Over printed again, and spoilt by the absurd foreground. If the bridge was the principal object, why not show it more and trim off some of the cabbages, etc.? (10) Under-exposed; we should say the lamp-post could have been completely cut out by shifting the camera (11) Over-toned, wants clouds, and far too much foreground. (12) Camera was not straight, and was too much in the centre of road. You could have cut off at least two inches on the right without missing it. Your great fault is in printing. You should try and see one or two good chloride prints.

ERA.—We hope to send medal on this week. With regard to the advertisement please return the paper, and we will return you the money. It was a mistake, and we have stopped the appearance. We are afraid, however, we shall not have another special number.

CROWN asks for a formula for something to put on prints before burnishing to give them a gloss. The usual thing is a solution of Castile soap, 1 oz. in methylated spirit, 20 oz. rubbed on the print with a pad of flannel, and then the prints burnished when this is dry.

W. BOOTH.—We have found your slides. "The Farmer's Boy" technically good, no fault to find. The "Roadside Spring" a little under-exposed the ground being too white and wanting in detail; both are worth entering in our competitions.

E. P. VULLIAMY.—We have turned up the notes on the Parvin telephoto lens, and it is nothing more than a negative meniscus placed at a fixed distance behind the positive lens. The magnification is much smaller than with the Dallmeyer lens, in a Parvin of 24 in. equiv. focus diaphragmed down to $f/96$. The range of focus was 4 in., but the increase in size at the longer focus from the shorter focus was only about one-eighth. At the same time the lens is moderately rapid. If you like we can get you a copy of the patent specification.

C. W. POOR.—Many thanks for slides; we will add them to our collection. Both are slightly under-exposed, and therefore somewhat heavy in the shadows and too clear in the high lights, and this is intensified by the peculiar tone you have obtained. They are just a trifle too dense.

ROBIN.—(1) Too thin and weak, wants clouds; (2) ditto; (3) ditto, very little too weak; (4) good; (5) wants clouds, and the tone is hideous; (6) too weak; (7) ditto; (8) too flat and poor; (9) ditto; (10) wants clouds, and over-exposed. we should say; (11) under-exposed, too harsh. too black and white; (12) just a little too weak; (13) spoilt by the tone; (14) under-developed.

LANTERN PLATE.—(1) Just right, and hut for the figure in the foreground a very pretty thing. (2) Also good, but wants clouds to break the straight line of hills. (3) Too patchy and blotchy; a very difficult subject, almost impossible to make a picture off; a little longer exposure would not have hurt it. (4) Looks like a hit from a negative; a little too hard; wants more detail in the whites. (5) Too black and heavy; give rather longer exposure, and do not develop so much (6) Good, except for the stain; lay this on white paper and you will see. (7) Slightly under-exposed and over-developed. (8) Good. (9) See remarks to 3. (10) Spoilt by the black spots. (11) Too weak. Under-exposed and under-developed, we should say, and this seems to be the general fault. Send in to our competitions, and see where you get placed.

J. W. S. asks how much more proportionately Tylar's window curtain shutter gives to the foreground than to the sky. When working at its quickest it gives about 1-28th to foreground and 1 33rd to sky. If worked slower this difference may be increased by pulling sharply down half way and then slowly.

G. J. JONES.—As soon as we can allot a date we will write you

CHAS. COLLETT.—Send us prints, and we will add to our lot.

W. WURTH.—Many thanks; we will get some Brilliantine and try it.

H. J. SPENCER asks about the Central Photographic Club: (1) Is any technical qualification necessary? No. Anyone engaged in, or interested in any way in, photography can join. (2) The annual subscription is 21s. (3) We send circular on about the club. (4) The only other club which has rooms of its own is the Camera Club, of Charing Cross Road, which has an entrance fee of about five guineas and a subscription of five guineas. (5) Is it possible to do any outdoor work in landscape during the winter months? Certainly; some of the finest pictures are to be obtained during the winter, leafless trees and hedges covered with rime and frost are exceptionally pretty, and even when there is no frost there are as many if not more chances of working in winter than in summer.

F. GREEN.—Your print is very much over-exposed, or else not sufficiently developed, and you either did not use a safe edge or else did not wax the temporary support properly. If you send a stamp to Elliott and Son, of Barnet, they will send you a small work on carbon printing and the current number of "The Photographers' Record," which has a carbon print of the same subject, and you will see what it should look like.

H. R. M. wants to copy a photo so as to make a lantern slide from it, and has been trying with not much success. He has copied it full size and proposes to reduce in the camera afterwards It naturally occurs to one at once, why not reduce in the first place and then print by contact? If the print is a cabinet, and measures, say, 6 in. on the longer side, all we have to do is to reduce it to half the size to obtain a negative, which will give us a lantern slide by contact printing. To find the distance from card to lens, multiply the focus by 2 + 1, and the distance between lens and plate will be one-half of the above result. For copying use preferably a rapid plate and give a full exposure, so as to get a thin, soft, and full-of-detail negative. In estimating exposure, allowance must be made for the extra extension of focus, and we should say that it might be considered a "dark interior."

J. H. ROBINSON.—We have sent your medal on and are obliged for hints. With regard to other matter we hope to look this up this week and return your slides and write you.

H. CLEMENCE asks whether there is any method of intensifying transparencies on printed-out chloride plates. Certainly, the best thing to do would be to bleach the image with mercury, and then after a thorough washing redevelop with ferrous oxalate or hydroquinone. Our correspondent states that he has not tried this, because he supposes that an image toned with chloride of gold will not bleach. This is a mistake; the image is not all gold, but some of the silver only is replaced with gold, and there is quite enough silver left to combine with the mercury. We should prefer instead of the above method to use Monckhoven's potassio-silver-cyanide intensifier for this purpose, because this deposits more silver in the image, and the other way mercury is deposited. Our correspondent also proposes to use Warnerke's gallic acid method of development; a great improvement on this is the process suggested by the Paget Prize Plate Company. "Please give a formula for diamidophenol, if this is not the same as paramidophenol." It is not the same, the common name of the former being amidol. No data given as to whether for negative or positive work. For the former try the following:—

Amidol	...	...	...	5 gr.
Sodium-sulphite	...	...	...	50 „
Distilled water	...	...	...	1 oz.

This will not keep any length of time. No alkali is required, and 10 per cent. solution of acetic acid should be used as a restrainer. Much obliged for good wishes and what you tell us. From what is sometimes printed, one would believe that there is but one paper and the rest are no good, but when the curtain is lifted as you have done, then we take heart and think there is yet another. Always glad to help you.

L. WHITE. — Surely the editor of the said book would be the proper person to write to, but we will turn up the book and see if we can understand the sketch, and then write you.

A. MITCHELL.—We can lend you 500 or 600 slides, but we must have them back.

A. S. B.—(1) Lindsay Hemery, Hanover Studios, Peckham. This correspondent asks whether she is debarred from sending in prints for competition from a negative from which some scratches have been touched out by a professional This is a case where, if possible, such work is allowable, but we are afraid that it will not do to admit it, because it opens the door to a lot of professional work, therefore we say such work will bar a print from that negative.

METER.—Try, No 3.

R. H. MERCER.—No, we have used them all this summer with very good results. We have seen the makers of the plates, and, speaking to them, they say, if you like to send them two plates of the different makes as correctly exposed as possible, they will develop and send you the results. We have never found them wanting in density. When using, Amidol development must be carried a great deal farther than with pyro. This correspondent states that he cannot get clouds so well impressed on the negative when using Amidol, as with pyro, even when taken specially. This is not quite correctly stated; the use of a particular developer cannot possibly affect the impression, although it may the final result. Probably Amidol giving a very much thinner and softer negative than pyro, has led to this statement. We have this summer made some cloud negatives, and found that it was necessary to carry development a great deal further with Amidol than with pyro, and finally we adopted Metol, as giving us more nearly what we wanted, in preference to Amidol. We think that metol or glycin are to be preferred in every case to Amidol.

J. CARPENTER.—We put that matter right for you.

SIR HUGH.—(1) How is it that a 4 in. condenser in a lantern will not cover the corners of a square masked lantern slide when the diagonal of the inside of mask is less than the diameter of the condenser, viz., $3\frac{1}{4}$ in.? The lamp is at fault; probably was not quite near enough to the condenser. (2) Can this be got over without buying a new condenser or masking down? Yes, by placing the lamp nearer the condenser. (3) How near may one venture to the condensers with a Stock's lamp without fear of fracture? We do not know exact distances, but quite near enough to give perfect illumination and perfect covering power to a $3\frac{1}{4}$ in. slide.

DROCABA.SO ANTE asks for the values of the following sodas for making up developers, washing soda, concentrated washing soda, and carbonate of soda crystals. To give the real equivalent value of these salts is not possible without actual chemical testing. In the first place, it is said that the men who are employed to make washing soda are paid by the quantity of water they can get into the crystals without their becoming liquid, and it may be taken as an accepted fact that all samples of washing soda vary in strength because of this fact. What concentrated soda is we do not know, but probably it is the true sesquicarbonate of soda which, if we remember rightly, was put on the market two or three years ago by a large chemical firm. If so, this is useless for developing. "Carbonate of soda crystals" should be the pure sodium carbonate $Na_2CO_3,10H_2O$, which, as will be seen, contains 180 parts of water of crystallisation in 286 parts of the salt. To obtain a developer of constant strength it is advisable to use only the exsiccated or anhydrous salt.

R. R. B.—We print formulæ this week, and you will be able to see what the makers recommend. Yes; we can probably let you have some slides for Christmas.

The Amateur Photographer

Telegraphic Address: VINEY, LONDON

Telephone No. 1645

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 477. Vol. XVIII.] FRIDAY, NOVEMBER 24, 1893. [Price Twopence.

Our Views.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

United Kingdom.....	Six Months,	5s. 6d.....	Twelve Months,		10s. 10d.
Postal Union	,, ,,	6s. 6d.....	,, ,,		13s. 0d.
Out of Postal Union ..	,, ,,	7s. 9d.....	,, ,,		15s. 3d.

TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addreased to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday evening's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Frizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

At the end of this month closes our Advertisement Competition, and we hope we shall have a goodly number of competitors. At the present time we are informed that photographs of naval and marine scenes, blue-jackets, tars, marines, on and off duty, are particularly needed.

"The Studio" for this month contains a notice of the Photographic Salon which is more than flattering, and should satisfy the promoters of the same. The writer of the critique, T. W., says, amongst other things:

"The exhibition just closed has done more almost than any previous one to prove that photography allows the artist free play for his own individuality. By using the lens or a substitute for it in such a way as to produce a special emphasis, or a generalising effect, by the methods of exposure and development, and the choice of printing either on fabric or rough paper, or the usual paper, a worker, or, as he certainly should be called now, an artist, may imprint his own personality to an astonishing degree upon his work. The value of photography as a medium for artistic expression is now established for ever; it was a battle won without fighting. The great delicacy in the gradation of tones obtainable by photography, its ease in securing aerial perspective, such as effects of twilight and mist, of atmosphere and distance, its ability to fix the positions and forms of such rapidly changing objects as moving water or clouds, its rendering of actual things with perfect fidelity, and its adaptability have naturally won over all artists to its side."

After a brief review of some of the leading pictures, foremost of which is placed Hollyer's "The White Frock," the critic winds up by saying: "The photograph of to-day is something more than a mechanical production. The individuality of the photographer is being expressed in his work almost as much as that of the painter, and while critics are discussing if there be Art in Photography, photographers are settling the question by themselves."

Milan intends to be *en fete* from May to October, 1894, and will hold a united exhibition, and one of the sections will be an international photographic exhibition. There are three classes.

CLASS I.

Professional Photographers.

Artistic Section. — Conventional photographs; portraits; groups; stereoscopic views; landscapes; reproductions of monuments; internal views; instantaneous photographs; photographs obtained by artificial light.

Technical Section.—Enlargements; reproductions; diapositives obtained by projection; vitrifications; various kinds of photographic printing on papers of all descriptions, on tissues, wood, ivory, porcelain, etc.; coloured photographs.

Scientific Section.—Micrography; astronomical photography; chromophotography; application of photography to geodetical and

topographical sketching; application of photography to anthropology, to anthropometry and to all sciences in general.

CLASS II.

AMATEUR PHOTOGRAPHERS' SECTIONS AS ABOVE.

CLASS III.

TECHNICAL AND INDUSTRIAL DIVISION.

MANUFACTURERS' SECTION. — Lenses; shutters; dry plates; films; sensitised papers; chemicals; solutions and compounds in general; cameras and implements; material for laboratories; pasteboard articles; furniture and accessories for photographic studios; backgrounds.

SECTION FOR TECHNICAL APPLICATIONS. — Phototypography; photoplastography; photocollography; photoglyptography and photomechanical process in general.

RETOUCHERS' SECTION.—Retouched negatives and prints.

SCIENTIFIC SECTION.—History of photography; books; monographs; pamphlets; periodicals.

Entry forms and full particulars may be obtained from the Secretaries of the International Exhibition of Photography, Circolo Fotographico Lombardo, Via Principe Umberto, 30, Milan.

THE list of patrons includes such well-known names as Abney, Anschütz, Carey Lea, Davanne, Eder, Jannsen, Lippmann, Nadar, Pizzighelli, H. P. Robinson, Vidal, Vogel, and Waterhouse. The rules and entry forms, etc., are drawn up in English, and we note that diplomas, and gold, silver, and bronze medals are to be given away.

THE Judges for the Bristol International Exhibition have been appointed—viz., Messrs. Valentine Blanchard, Payne Jennings, and S. P. Jackson. This is a pretty strong board. Blanchard and Payne Jennings are well known for their excellent technical and artistic skill, but possibly Mr. S. P. Jackson is not so well known generally. He is a distinguished water-colour painter and also a very good photographer. Some of his work, and he uses a Facile hand camera almost entirely, has long graced our office walls, and raised the envy of many who have seen it.

IN our issue of November 10th, p. 308, we passed a slight error, which has amused several of our readers. We stated in the arrangements for the Central Photographic Club, that Mr. H. M. Smith would probably give a paper on "Films v. Glass" on November 31st. We do not wish in any way to excuse our carelessness, but the facts of the case are that one of the worthy Hon. Secretaries sent us a notice which contained this statement, and in the pressure of work we allowed it to pass. Of course, we ought not to have done so, but we trust our readers will extend their kind forbearance.

THIS reminds us that on Friday next, 24th inst., at 8 p.m., Mr. Paul Lange, of Liverpool, will give his lantern lecture on Norway. We need not add that this is well known to be well worth hearing, and the Hon. Secretary will be pleased to send on tickets on receipt of stamped addressed envelope. We have one or two to spare, and any reader calling at the office may have one.

WE are glad to see from the following official notice that the Pall Mall show was a greater success than ever:—

"The thirty-eighth annual exhibition of the Photographic Society, which closed at 10 p.m. on Wednesday, 15th inst., has been, judging by the support it has received from the paying public, by far the most successful on record, no less than 11,376 having passed the turnstile (exclusive of the staff and of those members and others who visited the exhibition at times when it was not open to the public), as against 9,931 last year, which was, up to the present, the largest total.

"The exhibition has been visited as heretofore by many of the best known artists of the day.

"The lantern evenings were even more favourably attended than was the case last year, the gallery especially for the last few nights being packed."

WE did an injustice to one of our competitors from across the border in our Annual Lantern Slide Competition, as we find that Mr. A. D. Guthrie, of Edinburgh, won a bronze medal, so that both our friend "Camera," of the *Glasgow Evening Times*, and ourselves were in the wrong.

WE publish this week the full account of the inquest in the Bradford explosion, as we think that, though rather lengthy, it is of sufficient importance to warrant us doing so.

Flotsam and Jetsam.

ONE cannot help wondering what ever the *Strand* would do if it were not for the camera. Outside the ordinary articles, which are illustrated chiefly by reproductions from photographs, and the illustrated interviews, which, with all respect to Mr. Harry How, derive their interest quite as much from the fact that they are illustrated as from the fact that they are interviews—outside all this the *Strand* has now developed a curiosity as to great people's ears.

AND this curiosity it calls aurognomy. Readers of the *Strand* are getting quite learned in the science, and wax discursive as to the helix and the anti-helix, and talk impressively of the cavity of the concha. For ourselves, we confess there is to us something morbid and unhealthy in all this. It is almost as bad as the *Telegraph's* correspondence a while back. What on earth have we to do with the ears of the people, great or small? The adjectives, of course, refer to the people, and not to the ears.

AND talking or writing about them is not enough. Those unfortunate individuals whose likenesses happen to be public property, have, whether they like it or not, to submit to the quartering of their heads, and a ghastly assortment of these ears thus cut off, with a modicum of cheek and chin and neck, and a few wisps of hair, is dished up for the delectation of the *Strand's* readers. The S.P.C.A. ought to intervene, really.

ON many, we imagine, the effect will be sufficiently horrible. Besides, the whole thing is such a farce. A prominent musician is taken, and his "small and shallow concha" is held to denote his delicate perception of sound. And the next musician, perhaps equally prominent, has, of course, a very deep and capacious concha!

IN other directions, this magazine, to do it justice, uses photography with legitimate and telling effect. The portraits of celebrities at different times of their lives are often extremely interesting, as showing, among other things, the capacities of photography in portraiture, and the advances it has made in this direction of late years.

IT often happens that in the early years of some celebrity (even sometimes when that celebrity is a lady!) photography was not available, and a drawing or a painting has had to be resorted to. In such cases one cannot help noticing how superior in the expression of character is the photograph to the weak and colourless drawing.

NOT that therefore photography is superior to portrait painting. It is not necessary to imitate the scornful and

ignorant dogmatism of some so called artists who depreciate photography. No, but that good photography is far and away ahead of bad drawing and painting in rendering the true expression and the proper features of a man—that is our contention.

"At half-past one an adjournment was made for luncheon, after which the miners' delegates were photographed." That is from the account of the settlement of the coal dispute, which every one must have hailed with the utmost delight and relief. But wasn't it a little funny to sandwich in the photographer with the luncheon between the two parts of the Conference?

ANCHORITE.

Letters to the Editor.

RAILWAY CONCESSIONS FOR AMATEUR PHOTOGRAPHERS.

SIR,—For several weeks past I have intended writing to you upon this subject, and now that "Penfeather," in this week's issue of your very valuable paper, writes so despairingly upon the matter, I can, I feel, no longer defer giving the suggestion which has occurred to me, viz., that the secretaries of camera clubs and amateur photographic societies should request the railway companies to place them upon the same footing as angling associations, a member of which, upon production of a card of membership (previously approved by the general manager of the railway affected) at the booking office, provided he at the time has with him the usual apparatus necessary to the pastime, is supplied with a *return* ticket at a greatly reduced rate, usually, I believe, a single fare and a quarter, such ticket being available by ordinary trains, and in some instances for the return journey on the second or third day from date of issue.

I scarcely think "Penfeather" can be aware of this arrangement, or he would not have placed in the forefront of the difficulties in obtaining such concessions that of the necessity of having a double set of tickets, a matter which railway companies would not consider of the slightest consequence. As it is, not *two* sets only of tickets are required, but frequently to certain places of popular resort as many as half a dozen different prints of tickets are in stock. But in the event of my suggestion being successfully carried out, no *new* issue of ticket would be necessary, as the "anglers'" tickets could be used for the amateurs requiring them at the same fare. Again, the remarks as to such concessions being an opening for the general public to demand similar treatment are uncalled for, seeing that the arrangement I have alluded to above has existed for many years now, so far exclusively for the benefit of the angling associations concerned; and as many camera clubs may be regarded at the present time as "on all fours" with such associations, and certainly exist mainly for the same purpose, *i.e.*, recreation, surely the railway companies could not well decline to concede equal privileges if only they are approached in the proper spirit, and some guarantee were shown that in each case the concession would result in more travelling on the part of amateur photographers than is the case at present, as, sure enough, of course, the question of £ s. d. is the most important one, as "Penfeather" very truly remarks.

My own opinion is that an application from the proper quarter—and of course this must be strongly representative of all kinds of photographic societies—would be at once met by the railway companies with a compliance of the request, and if no time is lost the arrangement could be effected in time for next season.

One result of gaining such a privilege would be very largely to increase the membership of the various local clubs, thus conferring a mutual benefit upon both club and amateur alike. I myself do not write as a member of any such club, but if in addition to the usual advantages of membership I can claim the further privilege of a cheap trip on Saturday afternoons with my camera, I have no doubt I should not long delay in seeking membership in one.

I trouble you with these remarks in the hope they may be found useful, recognising as I do that anything that gives our youth healthy recreation is a benefit to the community in general.—Yours very truly,

HENRY G. WRIGHT.

* * * *

MR. WOODBURY'S EXPLANATION.

SIR,—In reply to Mr. Woodbury's letter, will you allow me to say that I frankly accept his explanation, but at the same time would like it to be clearly understood that I was not aware of his experiments, and, therefore, derived no hint or assistance of any kind from them. Nor have I since been able to succeed with iodide.

The whole affair seems to have arisen from a series of curious accidental coincidences combined with a little indiscretion on the part of Mr. Woodbury. But as he has now so fully and handsomely admitted our claim to what I must still hold to be the only practicable method, I trust no more need be said. For my part I am quite content to bury the hatchet. R.I.P.

A somewhat injudicious friend of Mr. Woodbury, who has been making a little sensational "copy" out of the incident, sees no novelty in the process, because in the year 1881 Dr. Eder described how gelatino-chloride paper for development (not printing-out paper) might not only be made from a chloride emulsion, but also by the round-about process of sensitising chlorised gelatine paper on a silver bath, and then washing out the surplus silver or converting it into silver chloride by floating again on a bath of sodium chloride.

Possibly there may be some connection between this and the new process, but I am somehow tempted to think of Tenterden Steeple and the Goodwin Sands, or to wonder whether any modern shipbuilding patents might be upset by showing that one Moses, a good many years ago, published a description of how a gentleman named Noah built an Ark.—Yours, etc.,

WM. J. WILSON.

* * * *

THE BRADFORD EXPLOSION.

SIR,—I have noticed the remarks in your last issue about the bursting of the gas cylinder at Bradford, and as the subject is one of great importance not only to lanternists but also to the public at large, it deserves careful consideration.

It is said the broken parts showed flaws, and it was tested before leaving the works and was only loaded to 120 lb. per square inch.

Now, if this cylinder, which is said to be about 3 ft. long, was only loaded to 120 lb. per square inch there would not be more than 3½ ft. of gas in it, which must surely be a mistake. Perhaps it means 1,200 lb. per square inch, which would give about 26 ft. or so.

To what was this cylinder tested? I have never seen one which was not stamped, "tested to 1½ tons" at least. One and a half tons gives 3,360 lb., and is it suggested that this cylinder was put to that strain, and some little time after burst at one-third of that strain? It appears to me that this is a subject for the most careful and searching inquiry, for if this is possible, what is the value of tests? They are of no practical value, and if it can be established that this case is as reported, then no further confidence can be placed in the safety of cylinders. A very interesting question, and one which may throw some light on the case, is, what appearance did these flaws present?

The chargers, Riley Bros., owe it to their customers and the public generally to have an independent and complete inquiry into it.

If such do not take place it will be impossible to eliminate that feeling of doubt, uncertainty and danger which the occurrence of such explosions create.—I am, yours, etc.,

A. MACKAY.

Reviews.

The *International Annual of Anthony's Photographic Bulletin* for 1894. Published by Anthony and Co., New York, and W. E. Peck and Co., Manchester House, Friday Street, E.C.

For five years we have been accustomed to a particular size and style for this annual visitor, but this new volume is increased in size of page, and we believe also in price, although on this point we have no accurate information. We are sorry to see the alteration, because it makes the set on one's library shelf look odd, although from other points the increase in size is an advantage. We note that there is now no English editor, although there are still numerous English contributors.

The articles are of the usual type of annual articles, from most of which, however, a grain or two of wheat may be winnowed from the chaff. The paper and printing is of the same high-class for which the publishers are noted, and the illustrations, which include an aristotype and two fine collotypes, and eighteen full-page process blocks, are of a high order, and numerous formulæ and tables are also included.

Ealing.—On 16th inst. Mr. W. T. White (Vice-President) in the chair, Dr. Gibbons read a paper by Mr. F. L. Pither, entitled "Notes on Landscape." The paper provoked a lively discussion, and regret was expressed that Mr. Pither had not entered into greater detail regarding his methods of work.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER VIII.

ACTION OF ADDITION OF FOREIGN SUBSTANCES TO GELATINO-BROMIDE OF SILVER.

MANY foreign substances of mineral and organic origin, all sorts of salts, acids, bases, kinds of gum, sugar, etc., have been experimentally incorporated with the emulsion. Sometimes such additions were recommended as advantageous, sometimes they were published as warnings. To the experimenter in this branch of emulsion photography, the following summary may be of service.

(I.) ADDITIONS TO GELATINO-BROMIDE OF SILVER DURING THE EMULSIFICATION AND PREPARATION.

Additions of this class mostly have the purpose of increasing the sensitiveness, or, on the other hand, of lessening the chance of the formation of fog.

(1) *Alcohol.* Alcohol may be added to the solution of bromide of ammonium and gelatine in water, before the solution of nitrate of silver. This addition has been recommended, especially in the ammonio-nitrate method, if one digests at higher temperatures and is afraid of the formation of a coarse grain. A proportion of five to twenty per cent. of alcohol to the aqueous solution of gelatine causes the formation of finer bromide of silver, but retards the ripening, if much gelatine is present; on the other hand, this addition has been tried with success if only very little gelatine is present. The addition of alcohol proves of true advantage during emulsification by Henderson's cold process (see Chap. XVII.). Alcohol prevents, according to Dr. Eder's experiments, the solution of bromide of silver considerably; the emulsions become more creamy. As a matter of fact in Henderson's cold process in the presence of 70 to 80 per cent. of alcohol one can increase the sensitiveness about ten times higher than without this addition. In the acid emulsion or in the boiling process the addition of alcohol has no advantages, but acts as a restrainer. Burton, indeed, first noticed (1882) that the ammonio-nitrate process gives very sensitive emulsions if one lowers the proportions of gelatine to 1-10th, and adds alcohol, by which means a fine ruby-red emulsion results. He mixed: (A) 336 parts of water, 40 parts silver nitrate, with sufficient ammonia added to dissolve the precipitate first formed; (B) 8 parts of gelatine (swollen), 28 parts of bromide of ammonium, 2 parts iodide of ammonium, 240 parts of water; when dissolved two parts salicylic acid dissolved in 100 parts of alcohol are added. Digest three-quarters of an hour at 50° C., add thereto 40 parts of gelatine, and allow to cool. This gives 20 to 23° W. Henderson gave a similar formula in 1885 (*Photo. Corresp.*, 1885). Obernetter[1] mixed ammonio-nitrate emulsion with full proportion of gelatine, but in the presence of alcohol: 10 parts gelatine are dissolved in 80 parts water, 20 parts alcohol, and 14 bromide of ammonium by the aid of heat. On the other hand, 10 parts gelatine are dissolved in 60 parts of water; 22 parts of silver nitrate, dissolved in 25 parts of water and converted into ammonio-nitrate of silver, are added to the first solution (the temperature of both solutions 50° C.); 25 parts of water and 20 parts of alcohol are then added; the mixture is placed in water at 37° C., and digested at the most half an hour, allowed to cool and washed. This emulsion gives sensitive plates of 17 to 18° W., yet sometimes with this formula fog easily appears.

(2) *Glycerine*, during the emulsification, keeps the emulsion clear (with ammoniacal processes), facilitates washing, lessens, however, somewhat the sensitiveness.

(3) Gum arabic alone for emulsification (instead of gelatine) was proposed at the end of the 70's. Mawdsley[2] emulsified bromide of silver in the presence of gum arabic, added then the gelatine, allowed to set, and washed. Much was promised towards the close of the seventieth decade from the process by which the stable gum replaced the changeable gelatine, and Ritchie had even taken out a patent for purified "Arabin" for emulsification[3]. Dr. Eder prepared with gum clear working but insensitive emulsion, which mostly gave thin images and exhibited little or no advantage over that emulsified with gelatine. According to Ashman an addition of gum to gelatine emulsion before washing causes white spots.[4]

(4) *Starch.* Pauli and Ferrau prepared bromide of silver emulsion entirely by means of starch instead of with gelatine[5]; the emulsion found no use. Lloyd[6] added starch to the gelatine emulsion in order to accelerate the development, especially with hard gelatine. One part of starch is finely rubbed up with some water and mixed with 250 parts of the emulsion before boiling. It swells up in boiling and increases the consistency of the emulsion, which is then treated as usual. It develops then very much quicker, and becomes, when once dried, very hard and capable of resistance.

(5) *Casein* dissolves in alkaline solutions, and can be used instead of gelatine for the preparation of emulsion. Bartlett[7] tried such emulsions, but found the sensitiveness not great.

(6) *Albumen.*—E. H. Farmer and H. K. Tompkins took out an English patent in London, No. 15,727, November 16th, 1887, for the preparation of an emulsion in pure albumen instead of gelatine or collodion. They dissolved a haloid salt in albumen and to it added a silver salt; for a printing-out process without development the silver salt can be in excess; for development, however, the haloid salt. As a good formula, was recommended: 18 oz. egg albumen, 128 gr. of bromide of potassium, 196 gr. of nitrate of silver, 20 oz. of water. Some carbonate of ammonia may also be added. Paper is coated with the same, dried, and made insoluble with alcohol or chrome alum. The following may be used as a developer: 12 parts of pyro, 100 parts of sodium sulphite, 24 parts of carbonate of ammonia, 20 parts of chloride of potassium, 9,600 parts of water. If it is to be printed out, one mixes 48 parts of nitrate of silver, 30 parts of citric acid, 10 parts of chloride of ammonium, and 480 parts of water. Farmer and Tompkins also mixed with a solution of hard gelatine. (Eder's "Jahrbuch f. Phot.," 1889, p. 387.)[8]

(7) *Agar-agar*, a vegetable gelatine, which is distinguished from the ordinary gelatine by an extraordinary setting power, has been tried for the preparation of gelatine emulsion. According to Mitchell, agar-agar may be used with advantage in hot climates, where ordinary gelatine scarcely sets. Dr. Stolze obtained no satisfactory results with the same.[9] A 1 per cent. solution of agar

[1] *Photo. Corresp.*, 1883, p. 82.

[2] *Photo. Corresp.*, 1879, p. 183, from *Brit. Jour. of Phot.*, 1,007, p 398.

[3] *Photo News*, 1880, p. 85.

[4] *Photo News*, 1883, p. 63.

[5] *Photo. Corresp.*, 1879, p. 183, from *Photo. News*, 1879, p. 439.

[6] *Brit. Journ. of Photo.*, 1882, p. 118.

[7] *Photo. News*, 1884, p. 12.

[8] *Photo. News*, 1882, p. 68.

[9] *Photo Wochenbl.*, 1882, pp. 129 and 138.

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THE 'AMATEUR PHOTOGRAPHER' MONTHLY LANTERN SLIDE COMPETITION, 1893-4.

Prizes:—Silver Medal, Bronze Medal, and Certificate.

CONDITIONS.

Each Competitor must send in Two Slides. The Slides must be mounted and be properly marked, and bear the title of the picture legibly written on the face of mask. Any Slide not properly marked will be disqualified. The marking which must be adopted is that most general, viz., two spots (white or coloured) on the face of the mask, which said spots should be placed downwards next the condensers in the lantern, so as to show the Slide the correct way on the screen.

Past prize winners of the Gold and Silver Medals in our Annual Lantern Slide Competition, or past winners of the Silver Medal in our Monthly Lantern Slide Competitions, are disqualified. Any Competitor winning a Silver Medal will be disqualified for any subsequent Competition, but if competing he may be awarded an extra silver bar for the ribbon. Winners of the Bronze or Certificate can only compete for the higher prize or prizes in subsequent Competitions.

The Slides of Competitors which do not gain a prize will be divided into three classes according to merit, and the Competitors' names etc, published in the next number of "Our Lantern Screen."

Winners of the Silver Medal must supply to the Editor on demand an unmounted print from the original Negative from which the lantern slide was made.

All Slides entered for competition to become the property of the AMATEUR PHOTOGRAPHER.

Competitors must send in all entry forms with Slides.

SUBJECT.	REDUCTION, CONTACT.	PLATE.	DEVELOPMENT.	REMARKS.

agar gives, indeed, a very quick-setting jelly, which keeps undecomposed for a long time without putrefaction. A ¼ per cent. and a still stronger solution gives, indeed, a fine emulsion, which, however, is separated by a second melting and does not keep the bromide of silver suspended, but allows it to fall in flocks. When 1 per cent. agar-agar was added to a gelatine emulsion, transparent lumps of agar-agar separated by cooling, and the bromide of silver remained in the surrounding liquid. Even ½ gr. agar-agar to 1 litre of gelatine emulsion separated on cooling.

(8) *Acids* in the emulsion preserve the same from fog whilst boiling, if they have been added from the beginning. Many acids, such as acetic and citric, ·2 gr. to every litre of emulsion, keep the same clear without really retarding the ripening. Hydrochloric or nitric acids in small quantity, 1 to 5 drops to 1,000 gr. emulsion, do not retard the ripening; in larger quantity—for instance, 10 to 30 drops to 1000 gr. emulsion—they cause insensitiveness and want of vigour. A short after-digestion with ammonia increases the intensity of the same, however, again. Hydrobromic acid acts more energetically than hydrochloric acid; the former destroys even the latent image.[1] Much citric acid in the emulsion retards the ripening, and imparts to the emulsion the quality which gives thin, delicate images, which with citrate of iron, etc., develop with a strong reddish tone, which for the positive printing process is desirable. (See the chapters respecting the same, further on.)

(9) A few drops of *peroxide of hydrogen* added to the emulsion before boiling keeps the emulsion very clear, like some acid, without hurting the sensitiveness.

(10) If some *chlorate of potash* is added to an emulsion acidified with hydrochloric acid, traces of chlorine are developed during boiling, which keep it clear, but are not conducive to sensitiveness.

(11) *Perchloric acid* Debenham added as a remedy against green fog. Cowan found that it lowered the sensitiveness, but gave clear shadows. Henderson declares that it is useless. According to Burton, 3 drops of perchloric acid to every 7 gr. of silver nitrate produce in the acid boiling process great clearness with good sensitiveness. (*Photo. Corresp.*, 1885, p. 178.)

(12) *Bichromate of potash* during the emulsification (equally also ammonium chromate) acts generally as a restrainer; it gives greater clearness and frequently less sensitiveness. Edwards used this insensitive-making quality of bichromate of potash in order to prepare plates and emulsion in daylight. He mixed bromide of potash, gelatine, and ammonio-nitrate of silver (about as in the process in Chap. XVII.), and added then to every 100 c.cm. of emulsion about 3 gr. of bichromate of potash. This operation, as well as the coating of the plate, he conducted in daylight. The plates coated with the unwashed emulsion only become sensitive if washed with water.[2] Dr. Eder found this process unsafe. Brown recommended to add ¾ per cent. of bichromate of potash to the faintly acid emulsion after boiling, then to allow to set and wash; the emulsion works then very clear.[3] In ammoniacal solution the chromate salts act much less than in the presence of an acid; even a trace of hydrochloric acid brings the anti-fogging power of the bichromate into play. Andra[4] adds to the cooked, neutral, or faintly acid emulsion 20 c.cm. of a solution of bichromate of potash, 1 in 50, to every 500 c.cm. of liquid emulsion, in order to destroy any existing fog, shakes, and allows to cool; after which it is washed. Burton added 1 part of chromate of potash to 500 parts of cooked emulsion without observing a loss of sensitiveness.[5] All these methods have found little use in practice. At the most, only the washing of the set emulsion in a solution of bichromate of potash has found use.[6] One adds to the first wash water about ½ per cent. of this salt, and allows the set and broken-up emulsion (acid boiled emulsion) to lie in it for one hour, after which one washes it in running water as usual.

(13) *Alum* added in large quantities during the emulsification makes the emulsion less sensitive; the images develop up clear, but not vigorously (by the ammonio-nitrate process).

(14) *Metallic perchlorides*, such as ferric and cupric chlorides, are prejudicial to the sensitiveness if they are added to the emulsion in the preparation, and are contained in the same during the exposure. They destroy the latent image. Cupric and ferric chlorides added to the emulsion during the mixing of the same, retard the ripening by boiling. A small addition of these salts makes a foggy emulsion work clear; an emulsion mixed with cupric chloride after boiling gives clear, insensitive, but very dense working plates.[7]

(15) *Citrate of potash* acts but little in the ripening of the bromide of silver during the emulsification (in heat); the ammonium salt, on the contrary, strongly as restrainer (Wellington).[8] Citrate of ammonium acts as a preventive of fog in the ammonio-nitrate process, and can be used with advantage. (See Chapter XVII.)

(16) *Nitrate of ammonium* is, indeed, never purposely added, but is formed by the double decomposition of the nitrate of silver and bromide of ammonium. In great concentration it prevents the jelly setting firm; after the washing out of the salt, the jelly again acquires its setting power. (H. W. Vogel.)

(17) *Sulphite of sodium* in the emulsion, with simultaneous presence of ammonia, reduces the bromide of silver and precipitates metallic silver on the vessel as a mirror.[9] Green fog should also be formed.[10] According to other assertions, an addition of sulphite of soda to the prepared emulsion before coating should make it more sensitive and keep the plates clear in developing.

(II.) Additions to the Prepared Washed Gelatino-Bromide of Silver before Coating.

The addition of foreign substances to the prepared gelatino-bromide of silver have mostly the purpose of hardening the gelatine, or of preventing foggy images or destroying already existing fog, or to alter the contrasts between light and shade of the developed images.

(1) *Bromide of potassium and ammonium.* If a gelatino-bromide of silver emulsion contains potassium or ammonium bromide, whether in consequence of bad washing or from an addition purposely made, the images are developed more slowly, more brilliantly, and correspondingly more hard and glassy in the shadows. A strong proportion of these salts is prejudicial. Quite a small proportion, on the contrary, is in most cases of use, because the fogging in the developer is obviated, the image appears by degrees, the

[1] Davis, *Photo. Journ.*, 1882, p. 125.
[2] *Photo. Archiv.*, 1882, p. 137.
[3] *Photo. News*, 1882, p. 297. Brown worked, not in daylight, but in the dark-room.
[4] *Photo. Corresp.*, 1882, p. 303.
[5] *Photo. Mitth.*, vol. 20, p. 6.
[6] First introduced into practice by Wilson 1881. *Photo. Archiv.* 1881, p. 145.
[7] Abney, "Photography with Emulsions," 1882, pp. 229, 239.
[8] *Photo News*, 1884, p. 79.
[9] Wellington, *Photo. News*, 1885, p. 223.
[10] Henderson, *Photo. News*, 1885, p. 224.

high lights first, and then the shadows. It is always necessary to wash the emulsion very well, so that no soluble bromide salt remains behind, and rather to add a little of the same later on, or else irregularities are unavoidable. The addition of bromide of potassium is always detrimental in emulsions which work hard and glassy. On the other hand, with such as show traces of fog it is advantageous. In many factories a small addition of bromide of ammonium or potassium solution is regularly made, *e.g.*, to 1 litre of emulsion 1 c.cm., with stronger fogging emulsions 10 to 30 c.cm. of a solution of bromide of ammonium (1 : 100). Dr. Eder uses as a rule an addition of 10 c.cm. of a solution of bromide of ammonium (1 : 100). Even if a test of the emulsion shows no perceptible fog, this addition is made. According to Brown[1] a foggy emulsion becomes immediately clear if one adds to it, before coating, 1½ gr. of bromide of potassium to every litre. However, this is the maximum quantity, and the sensitiveness frequently suffers by such a quantity under normal circumstances, so that it only amounts to one-quarter of the original sensitiveness. Emulsion which contains a trace of soluble bromide salt remains unchanged much longer than a thoroughly washed one. Gelatine emulsion preserved under spirits of wine containing bromide of ammonium, works after several months clearer than before. It can be kept over a year without the risk of the formation of fog.

(2) *Ammonia and carbonate of ammonia.* This has already been noted.

(3) *Carbonate of soda.* If one makes a washed gelatine emulsion permanently alkaline, by the addition of carbonate of soda, it becomes more sensitive, which Dr. Eder published[2] in 1880 ; carbonate of potash or ammonia acts similarly. Jastremoski found later that the sensitiveness is increased as much as four times by soda, if one adds 5 gr. of soda to 1 litre of emulsion. But the firmness of the film suffers by too great a quantity of soda. Even a small quantity of soda, *e.g.*, 1 gr. crystallised soda to 1,000 c cm. emulsion, causes the plates to become more sensitive and give more details in the shadows, without the gelatine becoming weakened. (Plener, in Eder's "Jahrbuch fur Photographie," 1887, p. 200). Compare further, under chapter "After Ripening."

(4) *Caustic potash.* Stosch extols the sensitising action of caustic potash. He dissolved 1½ to 3 gr. caustic potash in 100 c.cm. of alcohol (89-90°), bathed the plates in it for four or five minutes, and dried them. By this the sensitiveness was increased fourfold.[3]

(5) *Glycerine, sugar, dextrine, gum arabic,* and similar substances, easily soluble in cold water, have been recommended to be mixed with the prepared, washed emulsion, about ½ to 1½ gr. to every 100 c.cm. of emulsion, in order to accelerate the development of the emulsion plates. All these means give the negatives more vigour, increase the contrasts, and enhance the clearness in the developer. Since the opinions on the use of these additions are still divided, they should be applied with care, and the fact be not lost sight of, that they can only then be of use, if the plates do not develop quickly and brilliantly enough. Henderson recommended in 1881 the addition of gummy substances, and especially the addition of dextrin.[4] Scolik[5] tried sugar with good results. Dr. Eder found no special advantage, however, either in the addition of dextrin or sugar.

(6) *Glycerine.* A small addition of glycerine to the washed emulsion makes the same clearer, and acts as a weak restrainer. Gelatine plates containing glycerine, according to Abney,[6] work frequently very well, but spoil quickly if they are kept in an atmosphere sometimes dry, sometimes damp. It has also been proposed to add glycerine to the emulsion, so that after setting it does not dry up. It does not then putrefy, and is like the hectograph mass. If the glycerine and gelatine emulsion is poured on a level sheet of plate glass, after providing paper edges to the same, and cuts into strips, one can wash out one or two strips as required, and thus use up the emulsion.[7]

(7) *Albumen* has been added to the gelatine emulsion by Obernetter[8] and Spink.[9] It should produce greater clearness of the film and avoidance of stains and grain. Obernetter adds his to a gelatine emulsion prepared by a cold process after washing and melting—to every 100 parts 5 parts of alcohol, and 2 to 5 parts of whipped egg albumen.[10] Emulsion, which before gave matt patches which became black in the developer, should after this addition give faultless films. According to an article in the *British Journal of Photography* (1884, p. 465), the addition of 1 part of whipped egg albumen to 3 parts of gelatine emulsion should have the following effect :—The film sets more slowly, but dries more quickly to a very hard film, which develops exceedingly quick. Lloyd tried to obtain greater durability of the plates by bathing the same in a solution of albumen.[11] Up to present Dr. Eder has not been induced by the results of his experiments to make use of the addition of albumen to gelatine emulsion. (Compare On Albumen Emulsion, also Eder's "Jahrbuch f. Phot.," 1889, p. 387.)

(8) *Soap.* Grand added half per cent. of soap to the emulsion in order to obtain a better film free from bright grease spots. By means of this the grease should be completely and equally distributed and do no harm.[12]

(9) *Ox gall,* in the prepared gelatine emulsion, should, according to Foxlee, effect the removal of any existing particles of grease, and the grease-spots caused by the same.[13] Brooks found this addition ineffectual.[14]

(10) *Resin.* An addition of resin has been recommended by Wilde.[15] He mixed an alcoholic gelatine emulsion before setting and washing with some of a solution of bleached shellac in alcohol. Plates coated with such an emulsion set (according to Wilde) and dry quicker than without this addition, and have a matt appearance. The sensitiveness remains unaltered. The negatives appear as if they were made upon fine ground-glass ; the film adheres very firmly. In spite of this, this addition appears to have found no practical use.

(11) *Alum and chrome alum,* are frequently added to gelatine, and with the idea to harden the gelatine, and to make the film adhere more firmly to the plate, and more capable of withstanding against the developer, fixer, and intensifier. A jelly, with alum added, withstands for a very long time against putrefaction. This addition is only necessary if one has soft gelatine, or gelatine which has begun to decompose by itself. When using

[1] *Photo. News,* 1883, p. 78.
[2] Compare *Photo. Corresp.,* 1881, p. 204.
[3] *Photo. Mitth.,* 1882, vol. 18, p. 271.
[4] *Photo. Corresp.,* 1882, p. 57.
[5] *Photo. Corresp.,* 1882.
[6] *Photo. Journ.,* 1882, p. 136.
[7] *Brit. Journ. of Photo.,* 1884, p. 177.
[8] *Photo. Mitth.,* 1879, vol. 16, p. 2.
[9] *Photo. News,* 1882. p. 383.
[10] *Photo. Archiv.,* 1883, p. 254.
[11] *Brit. Journ. of Phot.,* 1883, pp. 485, 497.
[12] *Bull. Soc. Franc Phot.,* 1880, p. 33.
[13] *Ibid.* 1880, p. 315.
[14] *Ibid.*
[15] *Photo. Corresp.,* 1881, p. 100.

harder gelatine it is useless. Many manufacturers regularly use an addition of chrome alum; the addition is then made immediately before coating, and is only small because it is made as a precautionary measure; for instance, to 1 litre of melted emulsion 3-5 or 6 c.cm. of a solution of chrome alum (1 : 50).[1] If the gelatine, however, is bad or decomposed, ten times more is needed in order to prevent the frilling of the film; then the character of the plates alters, they work thin and give glassy shadows, and they become less sensitive. Large quantities of chrome alum make the emulsion glutinous, so that one must heat it to 60° C., or dilute it with 1-5th water, if one wishes to coat plates, or a lumpy coagulation of the gelatine emulsion is caused, and the prepared plates repel the developer. If one adds to a 4 per cent. solution of gelatine, 5 per cent. of the weight of dry gelatine in chrome alum, that is to say, 2 per cent. of the solution of gelatine, the solution sets more easily to a jelly. The setting point lies about 1 to 2° C. higher than before the addition of alum. Once set, the chrome alum gelatine only melts with difficulty and at a higher temperature—60 to 70° C.; or will not melt again. The dried film scarcely swells up at all in water, and the development of the plates is rendered very difficult. The addition of chrome alum to the gelatine emulsion must, therefore, be cautiously made. Too much chrome alum in the film, if added without special reason, exerts very frequently a prejudicial action, to which Bolton[2] and others have drawn attention. It makes the film horny, renders the penetration of the developer difficult, and lowers in consequence the intensity and sensitiveness. This remedy should, therefore, be employed only with cautiousness and in small quantities.

Ordinary alum acts much less energetically. If one adds to a 4 per cent. solution of gelatine 5 per cent. of the weight of dry gelatine in alum, the setting point rises about 1 to 2° C., the melting point about 10° C., but all mixtures of gelatine and 5 per cent. of ordinary alum melt completely with heat; with 15 per cent. of alum to the weight of gelatine, the gelatine solution sets about 5 or 6° higher, the mean temperature being thus 25 to 26° C., and the melting point lies about 15 to 20° C. higher, at about 45° C., without the melting point rising much higher than 48° C. The solution of gelatine which contains 30 per cent. of ordinary alum can be repeatedly allowed to set and again melted. Also after thoroughly drying, the gelatine containing 15 per cent. of alum has not yet lost the power of absorbing water, although it appears considerably weaker. The film swells up much less strongly than before the addition of alum. Even 30 per cent. of alum does not make the gelatine quite indifferent to water. One adds to 100 cc.m. of gelatine emulsion, ½ to 1 cc.m. of the following solution:—50 parts of water, 4 parts ordinary alum, and finally 4 parts of glycerine. Very bad gelatine requires more, others less, than the suggested quantity, in order to harden the soft gelatine; a few drops of alum solution even often suffices. It has also been recommended to mix 5 per cent. of alum with the first water for washing the emulsion, in order to prevent blistering. In this case the gelatine takes up the alum and becomes hard; the melting point rises. Since, however, the quantity of alum thus taken up cannot be accurately determined, Dr. Eder considers this method unpractical.

[1] Cowan states that 18 cc.m. chrome alum to 2 litres of liquid emulsion is the maximum addition (*Photo. Corresp.*, 1885, p. 101). Usually the half or quarter of this quantity is sufficient.

[2] *Bull. Soc. Franc. Phot.*, 1880, p. 65.

(To be continued.)

Splashes of Ink.

By Penfeather.

Now is the time, for those whose inclination lies in that direction to experiment in gelatine emulsion making. In hot weather there are endless troubles arising from various reasons, and not the least of the difficulties are those caused by the slow setting of the emulsion, both before washing and after coating of plates. Heat is a great accelerator of chemical action, and when it can be regulated is a faithful servant, but when it gets out of control, as it has done at times during the past summer, it is a bad master indeed. In the temperate and cold months of the year the way of the emulsion maker is smooth, provided that the temperature of the room devoted to the operations, and the water employed in the process, can be kept well above freezing point, and also provided that there are suitable arrangements for drying the plates. There is no more fascinating pursuit connected with photography than experiments in the direction of the manufacture of one's own plates. The series of able papers from the pen of Mr. R. Child Bayley, which have recently appeared in the columns of the Amateur Photographer, will furnish all the information necessary to the novice. It may be said of them, as a compliment and not in disparagement, that they consist of an epitome of the experience of the best authorities on the subject, and the directions are given so clearly as well as concisely that if faithfully followed there is little chance of absolute failure. I say "absolute" failure, for there is no "absolute" certainty about emulsion making, at any rate in small quantities. No one, however experienced, can make, with certainty, two batches of emulsion in succession precisely alike in all their qualities. They may be equally good and yet different in rapidity or in other ways. Herein lies one of the greatest charms which emulsion making presents to him who is at heart an experimentalist. Commercial plate makers are extremely reticent as to their methods, and naturally do not advertise their failures, but that they do have failures occasionally there is ample evidence. It is reported to be their custom to mix several batches of emulsion together, and thus, by averaging, they are able to secure uniformity that cannot otherwise be obtained. If glass has to be bought there will be, perhaps, little saving in cost, but if a supply of spoiled plates or waste negatives is available, the expense of the emulsion itself being so trifling, considerable economy may be effected. But, apart from the mere consideration of cost, in these days of "you press the button and we do the rest," it is a feather in one's cap to be able to show pictures produced entirely by oneself, even to the making of the plate.

The Editor of your contemporary, the *Hand Camera and Lantern Review*, apparently enjoys the operation of being roughly handled, an operation he must be well accustomed to by this time. I am speaking metaphorically, of course. It is but a few weeks since he received from the *British Journal of Photography* a mauling of so severe a nature that it would have served as a warning to any ordinary person to look after his own "beams" before seeking for "motes" in others. But with a chirrupy, self-satisfied air, this paragon of editors continues his course, and, in the current number of his periodical, makes merry over an error which you, Mr. Editor, have allowed to pass, of printing November 31st for November 30th. He is utterly unconscious of the fact that in the same page which heralds the discovery of your offence he is guilty of a blunder of which an ordinary sixth standard board school boy should be ashamed. In one of the editorial paragraphs, he makes use of the phrase "they were neither numerous *or* interesting." Let him wriggle out of this if he can.

This immaculate personage has already proved himself an expert in "gas," but, since he now constitutes himself an authority on chronological and kindred subjects, let us see what evidence there is to support his claim. The heading to his editorial replies to correspondents runs thus:—

> NOTICE.—Subscribers and others requiring answers to their letters in this column must send them so that they reach us by TUESDAY MORNING'S Post. All questions will be dealt with, as far as possible, in the current issue of the Review.—Ed. *H. C. and L. R.*

Here is an instructive chapter in five lines. The title of the *H. C. and L. R.* proclaims it a "fortnightly" journal, yet that professor of precision its learned editor is unable to grasp the fact that there must be two Tuesdays between each issue; but that is, of course, a matter of infinite unimportance to an individual who is so far capable of annihilating time that he is able to answer queries in his "current issue." Clearly he is out of practice in editorial duties, and if he would allow me to make a suggestion, it would be that he should, for a time, transfer his attention to the circulation department of his paper, where his duties would be light, and where he would have ample leisure to study the ethics of journalism and other equally useful subjects.

Some time last year a gold medal was offered for competition

amongst photographic societies by one of your contemporaries, and in due course the prize was won and the award of the medal was announced with great flourish of trumpets. This was nearly twelve months ago, but in spite of repeated applications on the part of the society this medal is not forthcoming. There is evidently a screw loose somewhere. There is much to be said against the practice of newspapers awarding medals, but while the practice is allowed it is to the interest of journalists as well as photographers to see that the conditions are fulfilled on both sides. If a photographic society were found out in transgressing the rules of a competition, the fact would be made public at once, and it is therefore unfair that a secret should be made of any transgression on the other side. I trust that this hint will be sufficient to your contemporary, and that he will see his way at once to remove the stigma under which photographic journalism at present rests.

The Bradford Explosion.

OPENING OF THE INQUEST.

THE Bradford Borough Coroner (Mr. J. G. Hutchinson) opened at the Town Hall, Bradford, on the 10th inst., the inquest on the body of the boy, John William Fuller, of 65, Arthington Street, Bradford, who was killed on Wednesday by the bursting, at the Exchange Railway Station, of a cylinder of compressed oxygen, intended to be used for an oxy-hydrogen magic-lantern. Mr. James Freeman attended on behalf of the relatives of the deceased, Mr. Morgan was for Messrs. Riley Brothers, lantern outfitters, of Cheapside, Bradford, the employers of the lad, and Mr. T. Carr-Jackson, of King's Cross, London, and Mr. Hunt, of Manchester, appeared for the Great Northern and Lancashire and Yorkshire Railway Companies respectively. Supt. Paul watched the case on behalf of the police.

On the opening of the inquiry Mr. Morgan asked to be allowed to express the deep regret which was felt by Messrs. Riley Brothers at the very sad occurrence which was the subject of investigation, and to assure the Court that anything that they could do to assist in the inquiry, or any information they might possess, was entirely at the disposal of the Court.

Superintendent Paul asked if it was necessary for him to produce the fragments of the cylinder which had burst.

The Coroner said that at present it was not necessary. It had been suggested to him by a gentleman connected with the Yorkshire College at Leeds that if a duplicate of the broken cylinder were obtainable it might be well to submit it to examination.

Mr. Morgan said his clients had one cylinder which was supposed to be a duplicate of the broken one. Both were delivered to them at the same time by the firm who filled them with oxygen. The sound one was entirely at the coroner's service, and might be submitted to any process which would assist the inquiry.

The Coroner intimated that he intended at that sitting to proceed no further than the identification of the body, so that it might be interred; and he should then adjourn the enquiry until Friday next. A communication of the facts of the case had been made to the Home Office. He was required by statute to give certain notices, and he should adjourn the inquest for that purpose. He could not lose sight of the fact that the occurrence raised a most important question, for he was informed that the railway companies had been accustomed to receive these cylinders of compressed gas without a thought that there was the slightest danger in connection with them.

Robert Fuller, shoemaker, of 65, Arthington Street, Bradford, father of the deceased, then gave evidence. He said the deceased was fourteen years of age, and he had been employed by Messrs. Riley Brothers for slightly over a fortnight. Before he went to work at their establishment, however, he had been in contact with cylinders such as that in question. Witness had been the caretaker for some schools and chapels where lanterns had been in constant use, and some of the cylinders which the deceased had seen there had been supplied by Messrs. Riley Brothers. Witness last saw deceased alive on Wednesday morning, and on Thursday was shown his dead body at the mortuary.

Mr. Morgan asked for inspection of the fragments of the cylinder. It appeared, he said, from testimony which he had received from the firm who filled the cylinder, to be of the utmost importance that the fragments should be minutely examined before the atmosphere had time to affect the broken edges, so that it might more readily be seen whether there had been any old fracture or defect either in workmanship or material.

Mr. Freeman thought it would be advisable that some independent gentleman should inspect the fragments on behalf of the Court. His clients were, unhappily, not in circumstances which enabled them to call in the assistance of any scientific gentleman.

The Coroner said he thought Mr. Morgan's application was a reasonable one, and one in which possibly there might be a little urgency. He did not know what course the Home Office would follow, but he would appoint someone to examine the fragments in company with Messrs. Riley's expert. Mr. Herbert Morley, of Messrs. Cole, Marchant, and Morley, engineers, of Bradford, would so act, and Mr. Goodman, professor of engineering at the Yorkshire College, would also examine the fragments.

Mr. Morgan said he found on inquiry that his clients had only one duplicate of the broken cylinder, which was delivered at the same time, and this happened to be without its valve. He mentioned this that it might not be matter for comment that no complete duplicate was forthcoming.

It was arranged that the duplicate should be handed to Superintendent Paul, who had charge both of the broken cylinder and of the second, which the lad was carrying, but which remained unbroken.

The inquest was then adjourned till 17th inst.

THE RESUMED INQUEST.

The Bradford Borough Coroner (Mr. J. Hutchinson) on 17th inst., resumed his inquiry into the circumstances attending the death of John William Fuller, aged fourteen, of 65, Arthington Street, Bradford, who was killed by the bursting of an oxygen cyliuder at the Exchange Station, Bradford, on Wednesday, November 8th. Mr. James Freeman appeared on behalf of the friends of the deceased; Mr. R. M. Macmaster for the Lancashire and Yorkshire Railway Company; Mr. Carr-Jackson, of King's Cross, London, for the Great Northern Railway Company; and Mr. Morgan for Messrs. Riley Bros. Mr. W. J. Crighton watched the proceedings for the Manchester Oxygen Company.

Joseph Gledstone, of 47, Town Lane, Idle, said he was manager to Mr. Murgatroyd, builder, of Idle. On the 8th November he was going to the Great Northern Railway Station at about five minutes to six to proceed to his home. In Drake Street he noticed the deceased with two iron cylinders. He was carrying one on his left shoulder and dragging the other on the ground, having hold of it with his right hand. Witness walked behind the boy into the subway leading to the station, and before he reached the steps there was suddenly a loud explosion. Witness was not knocked down, but was much shaken, and his nerves had not yet recovered from the shock. Witness at once stepped forward and stooped to see the boy, who was lying on the ground. He was dead, and his head was dreadfully injured, and there were fragments of one of the tubes strewn all about. The other cylinder was perfect. Witness afterwards went to the Town Hall and made a statement on the matter. At the time of the accident witness did not see anyone else in the subway besides himself and the deceased, although the passage was generally much frequented.

By the Foreman: The cylinder which burst was the one which the boy was carrying on his shoulder. He saw the deceased drop the cylinder from his shoulder to the ground. There was a ring like a bell, and the explosion occurred instantly.

By Mr. Morgan: Witness did not see that the lad had any handcart. He was carrying the cylinders in Drake Street.

In reply to the Coroner, witness said that two of the gas-lights in the passage were extinguished by the explosion.

Superintendent Paul, of the Bradford borough police, said that half an hour after the explosion he went to the station. The body had then been removed and the pieces of the broken cylinder had been gathered up. He collected fourteen pieces from different persons and also a sound cylinder. On Saturday morning he submitted the pieces for examination to Mr. Morley and Professor Goodman, of the Yorkshire College, and Mr. Ellis, of Messrs. Thwaites Bros.

Mrs. Jackson, mortuary attendant, said that she attended to the body of the deceased. The head was shattered and the left arm was cut open right to the elbow. She removed two large pieces of iron from the body, one being embedded in the head and the other in the arm.

Albert Kershaw, of 280, Leeds Road, said he was unpacker for Messrs. Riley Bros., lantern outfitters, of Cheapside, Bradford, for whom the deceased also worked. The deceased was instructed to take to the Exchange Station two cylinders, one charged with oxygen and the other with coal gas, filled so far as he knew by the Manchester Oxygen Company. The cylinders were to be taken in charge at the station by Mr. Dalby, who was also in the employment of Messrs. Riley Bros., and were to be conveyed to Queensbury for use there that evening. The deceased put the cylinders on to a handcart and left the premises at about a quarter to six in the evening. The handcart was brought back to Messrs. Riley's warehouse about a quarter of an hour after the accident by five boys, whom witness did not know.

Henry Dalby, 32, Kimberley Street, Bradford, optician's assistant, said he was in the service of Messrs. Riley Bros. Last Wednesday week, about twenty minutes to six in the afternoon, he ordered the

deceased to take two cylinders to the Exchange Station in time for the 6.7 p.m. train for Queensbury. They were intended for use that night, be himself being the exhibitor. One cylinder was painted red and the other black. The one painted red was charged with coal gas and the black one was charged with oxygen. The cylinders were filled at Manchester by the Manchester Oxygen Company. The oxygen cylinder had only come in the same morning. He could not say when the other came. The cylinder containing oxygen belonged to Messrs. Riley Bros. He was not certain as to the ownership of the coal-gas cylinder. He gauged both the cylinders about four o'clock the same afternoon. He found that each cylinder contained 120 atmospheres, which was a safe gauge. He had occasionally found cylinders a point over, but this point would be lost in the test and the cylinder would still be safe. He had knocked these cylinders about for four years and had never had any accident with them.

The Coroner: If the cylinder became bulged and its containing power was reduced, would not that increase the risk of explosion?—Witness: Yes.

Have you proper boxes in which to pack these cylinders?—No.

Supposing you had such boxes, would not that lessen the liability to accident?—Yes.

By Mr. Freeman: Each cylinder would weigh about 25lb.

By Mr. Morgan: The cylinders are supposed to be tested before they come to us each time they are revalved. The cylinder which exploded had been revalved by the Manchester Oxygen Company. I told the boy to meet me at the Exchange Station on the Queensbury platform with the cart and the cylinders. He had a bag and parcel to take to the station besides. My instructions were that he was to meet me on the platform with the cylinders, and that he was not to put them into a van or anywhere. When the cylinders come to my employers they are simply bare.

The Coroner: Tossed and thrown about?—Witness: Yes.

By Mr. Morgan: I have never seen one of these cylinders bulged. I have never regarded the cylinders as dangerous in any way.

By the Coroner: I have travelled frequently by rail with charged cylinders and have always taken them as personal luggage. I have always placed them in the luggage van.

By Mr. Macmaster: I have never declared to any railway company that the cylinders were dangerous goods. I have not seen the notice (produced) as to dangerous goods hanging in the Exchange Railway Station.

A Juror: Is it customary for Messrs. Riley Bros. and similar firms to supply these cylinders to private individuals without assistants?—Witness: In many a hundred cases.

In answer to further questions, witness said that the cost of each cylinder itself he should think would be about 35s. The price of the charge was about 3d. or 4d. a foot.

Charles White, of 29, Wingfield Street, guard in the employment of the Lancashire and Yorkshire Railway Company, said that on the evening of Wednesday, November 8th, he was in the parcel office, which was near the Drake Street entrance of the subway. A few minutes before six o'clock the deceased lad came into his office and booked a parcel to go by train. Witness received and entered the parcel, and the lad then asked if he might leave his can and parcel-book in the office while he went into the station. Witness said he might, and the deceased then left. About two minutes afterwards witness heard the report in the subway and went out to see what it meant. Finding the subway in darkness he returned to the office, and after locking the door returned to the subway. He then found a crowd round the body of the deceased. Soon afterwards he noticed a bandcart standing in Drake Street near the parcel office. There being no one with the cart, he had it removed to the station premises, and he afterwards learned that it had been claimed by Messrs. Riley and had been removed to their premises.

John Goodman, professor of engineering at the Yorkshire College, said that on Saturday last, in company with Mr. Morley and Mr. Ellis, he inspected the fourteen pieces of metal in the possession of Superintendent Paul, and also the sound coal-gas cylinder. Every piece was carefully examined. The fractures in every part were crystalline—coarsely crystalline in the portions of the bottom and top of the cylinder, but of finer grain in the centre. There was a peculiar fracture near the top of the cylinder, which was different in shape from any other fracture. This might or might not have been due to a flaw in the material. The point was a doubtful one, and opinions might differ. The spot was carefully examined, but he could not come to any definite conclusion. The fractured pieces showed bulging which might have been done in the accident. The thickness of the metal varied very much over the cylinder. It was impossible to avoid some little variation in making such cylinders, but he certainly thought the variation much greater than it ought to have been. In a well-made cylinder the variations would not be so great. He had only a limited knowledge of the manner of making such cylinders.

The Coroner: Would not the varying thickness of the metal be a source of weakness?—Witness: Yes and no. If the thinnest portion was sufficient to bear the pressure, the variation of the thickness would be no weakness, but if the metal was so badly disposed that the thinnest portion was unable to bear the pressure that would, of course be a weakness. The risk of bulging, Mr. Goodman went on to say, would certainly be greatest where the metal was thinnest. He took away to Leeds two pieces of the broken cylinder which he first had photographed. The pieces were then cut up into test pieces and subjected to a series of experiments. A sound cylinder supplied by Messrs. Riley as a duplicate was also handed to him, and this he caused to be cut into pieces, and found it as variable in thickness as the one which was broken. These pieces were also subjected to experiment, and the witness handed in a detailed report of the character of the tests inflicted and the results obtained. Steel ought not to be used of a greater tensile strength than 32 tons per square inch, and no boilermaker would dare to use it of greater tensile strength for internal pressure. The steel of the cylinder in question was very high indeed in tensile strength. In some cases it was over fifty tons per square inch. This in itself was not harmful, but it was always considered that steel of very high tensile strength was very brittle, and therefore unsuitable for internal pressure, especially when, as in the case of an oxygen cylinder, it was likely to be subject to much knocking about. The remedy, of course, would be to use material of great ductility. The steel actually used was, in his opinion, unsuitable for the purpose. The maximum thickness of the body of the duplicate cylinder was found to be ·242 in., and the minimum was ·164 in. In the cylinder which burst he found that the pieces varied from ·172 in. to ·205 in. in thickness, though he might perhaps find a thicker piece on examination.

The Coroner: You have heard the evidence that this cylinder fell from the shoulder of the deceased on to the concrete floor. Does that explain its bursting?—Yes; after looking at the figures of my experiments, which show how very hard and brittle the material is. Although the tensile strength is very great, it has very little ductility. If the material used were good material, there ought not to be the slightest danger of an explosion from such a fall on to the floor. This morning, before coming here, I took one of the cylinders which we are constantly using at the Yorkshire College, and dropped it 22 ft. 6 in. on to a cast-iron block. There was no explosion, and the cylinder received only a small dent.

In reply to further questions, witness said that the cylinder of which he had just spoken was charged with oxygen at the time, and it was charged by the same firm—the Manchester Oxygen Company—which filled the cylinder that burst. But it was a cylinder of different make to that which burst. He then took a cylinder similar to the one he dropped that morning and cut it up, and found that the thickness was—maximum ·232 in., and minimum ·178 in. A third cylinder was burst by hydraulic pressure, the bursting taking place at between 59 cwt. and 60 cwt. per square inch. These experiments confirmed his opinion that the material used in the cylinder which burst and killed the deceased was improper. The annealing of steel reduced the tensile strength somewhat, but increased its ductility and made it more capable of stretching without breaking. The annealing process was indispensable, and no cylinder ought to be sent out until it had been thoroughly annealed. With regard to tests, he believed that cylinders ought to be tested to a considerably greater extent than the working pressure, but he believed that it should not be as much as double the working pressure, as it was possible to permanently injure a cylinder in the testing.

The Coroner: Your opinion is that the cause of the bursting in this case was the defective material of which the cylinder was composed?—Witness: Yes; but I would hardly say "defective" material—it was unsuitable material, and if it had been annealed the chances of accident would have been very much less.—Witness went on to say that he did not think it could be said that there was any danger attending the use of a properly-constructed and annealed cylinder. There were probably some hundreds of thousands of these cylinders in circulation in the country, and this was the very first accident which had ever occurred from the breaking of an oxygen cylinder or "bottle." Of course, if the cylinder or "bottle" were made of unsuitable material there would be serious danger.

In reply to Mr. Morgan, witness said there would be no outward appearance to indicate that the cylinder in question was of unsuitable material and had not been annealed, for the cylinder had been painted. At the Yorkshire College the cylinders used were not subjected to any test whatever, the makers being trusted. He had himself never cut up and tested a cylinder before this accident. His predecessor, however, had on one occasion cut up a cylinder and made tests, of which witness had the result. There was a mark on the valve of the cylinder which burst and killed the deceased indicating that it had been tested to a ton and a-half per square inch. He declined to commit himself to any opinion as to whether this test was sufficient for a working pressure of 1800lb.

A conversation took place between the Coroner and Mr. Mac-

master with regard to the interest which the railway companies had in the matter, and Mr. Macmaster mentioned that a conference of high railway officials was taking place in London that afternoon to consider whether any further precautions should be taken in connection with the carriage of these cylinders, and whether any further regulations were necessary. He should expect, after what had been learned that day, that the present regulations were amply sufficient. The matter would receive most careful attention.

Mr. Jackson said that he had just received a telegram saying that the conference had deferred further consideration of the matter in order to ascertain what information was elicited at that inquest.

Mr. Goodman, resuming, mentioned that an oxygen cylinder was some time ago dropped accidentally upon some concrete stairs at the Yorkshire College. The stairs were broken, but the cylinder was only dented, and there was no explosion. He had known one or two instances where such cylinders had been dropped without exploding, and he produced a photograph of a cylinder which was damaged when delivered, and which had a very deep dent, evidently from a blow, but the cylinder had not blown up.

Mr. Jackson mentioned that the result of experiment on such cylinders was reported in "The Year-Book of Photography, 1893."

In reply to the Coroner, Mr. Goodman said that there was very considerable difference in the cost of different makes of cylinders.

Herbert William Morley, a member of the firm of Messrs. Cole, Marchent and Morley, engineers, of Bradford, said that, acting under the instructions of the coroner, he took part in the inspection made by Mr. Goodman and Mr. Ellis. His report, which was read at length, agreed in its main findings and opinions with the evidence of Mr. Goodman.

Joseph Riley, of the firm of Messrs. Riley Brothers, magic-lantern outfitters, Cheapside, Bradford, said that the cylinder which burst with fatal result was purchased by his firm from the makers—the Projectile Company, Limited, of London—and delivered direct to the Manchester Oxygen Company to be filled. It came to his premises in January with five others, one of which was cut up by Mr. Goodman, and the other four of which were now at his premises. The cylinder which burst was the only one which had been used, the valves of the others being of an inconvenient shape. When the one which had broken was filled a fee was paid for it being tested. Including this fee, the cylinder had cost 4d. more than cylinders could be purchased for direct from the Manchester Oxygen Company, and this increased cost had led his firm to buy no more from the Projectile Company. The cylinder which had burst had been out four times.

After the coroner had summed up, the jury found a verdict that the deceased met his death from the accidental bursting of a cylinder made of unsuitable metal, and they strongly recommended that in future these cylinders when sent out should be protected, either by cases or otherwise.

On a System of Measuring and Numbering the Stops of Photographic Lenses.*

BY DR. PAUL RUDOLPH, OF JENA.

THE brightness of the image of an object of given brightness placed at a given distance formed by a lens of a given focal length may be determined by the angular aperture of the pencil of rays diverging from a point of the object and entering the objective. When the object is situated at infinite distance the intensity of the illumination cannot be determined by the *angular* aperture of a *cone* of rays, but may be found from the *diameter*, D, of the *parallel pencil of rays* proceeding from the object and forming the image, *i.e.*, from the diameter of the *effective pencil* of rays proceeding from the object. The latter case enters chiefly into consideration in photography, and in the following discussion it will be assumed that parallel light enters the objective. We shall also suppose that the effective pencil of rays is concentric with the axis of the objective.

The quantity of light entering the objective has been found to be directly proportional to the square of the diameter of the effective pencil of rays. The diameter of the effective pencil of rays and, therefore, also the quantity of light admitted by the objective and forming the image, depends upon the effective diameter of the lenses or the diameter of the central diaphragm.

Every lens forms in itself a stop, and where no special stop is interposed between it and the object the edge of the lens determines the diameter of the effective pencil of rays. In objectives having no stops the diameter of the effective pencil of rays would always be the same. In order to obtain certain pictorial effects it is necessary to provide means for modifying the diameter of the pencil of rays. With this object photographic lenses are fitted with interchangeable or variable stops (Waterhouse rotating or iris diaphragms), by means of which the aperture may be varied. The position of the stop is governed by the type of the lens; it is not a matter of choice if the capabilities of the lens are to remain unimpaired.

If we compare objectives of *different focal lengths*, admitting pencils of rays of the same effective diameter, D, we find that the brightness of the image varies in conformity with the following law:—the brightness of the image is inversely proportional to the square of the focal lengths of the objectives.

Thns, if the diameter of the effective pencil of rays is denoted by D, and the focal length of the objective by f, then the brightness of the image is proportional to $\frac{D^2}{f^2}$. The ratio $\frac{D}{f}$ is termed the relative rapidity of the objective or of a certain stop belonging to it. The largest stop which yields a well-defined image represents the *maximum relative effective aperture*. With respect to the capacity and quality of the objective it is *quite immaterial* whether the maximum aperture is determined by the diameter of the lens itself or by the stops appended to the objective. In order that the illumination may be uniform throughout the image from centre to margin, even with the maximum relative aperture, it is desirable to make the diameter of the lenses larger than is actually necessitated by the largest required aperture.

Various objectives when stopped down in such a manner as to make the relative apertures the same in every case, produce the same illumination in the image and the same depth of definition, the ratio of reduction or magnification being the same. Objectives stopped down to the same degree of relative aperture and used under precisely similar conditions as to illumination require therefore the same exposure.

From this the fundamental importance of the relative aperture becomes at once apparent, and hence it may be inferred that it is a more correct plan to graduate the stops in terms of this relative value, *i.e.*, in terms of the relative aperture, than according to any absolute standard.

The question as to whether in ratio $\frac{D}{f}$ the diameter of the stop may be substituted for that of the efficient pencil has repeatedly been discussed. In many countries this question has been answered in the negative, and correctly so; in England, however, the diameter of the stop still forms the basis of measurement. If there were but one type of photographic objective, more particularly only single lenses whose stops are situated on the side facing the object, there would exist no ambiguity. But as there is a great variety of different types in use, the desirability of the uniform measurement of the stops compels us to adopt the *diameter* of the *efficient ineident pencil* admitted by a given stop as the unit in determining the value of the relative aperture.

With all the doublets and triplets which are known to me, the diameter of the effective pencil is always greater than the diameter of the corresponding stop. The amount of the difference does not depend upon the type of the objective but also upon the maximum relative aperture in respect of which the objective is corrected spherically. I have examined a series of the most popular types and found the following data. If the value of the relative apertures $\frac{D}{f}$ is equal to $\frac{1}{25}$, then the ratios between the diameter d of the stop and the focal length of the objective in each case are as follows:—

	$\frac{d}{f}$
Aplanat, 1/4·5	1/24·5
Aplanat, 1/8	1/22·6
Antiplanet, 1/4·5	1/25·4
Antiplanet, 1/6	1/21·4
Anastigmat, 1/4·5	1/24
Anastigmat, 1/6·3	1/23·4
Anastigmat, 1/7·2	1/23
Anastigmat, 1/9	1/22·6
Anastigmat, 1/12·5	1/22

English opticians generally ascribe, therefore, too small a relative rapidity to their objectives. In the case of the portrait antiplanet, *e.g.*, the stop of 1/20 relative aperture would be described as 1/25·4; the erroneously ascribed relative rapidity $(\frac{1}{25}\cdot 4)^2$ is, therefore, to the actual rapidity $(\frac{1}{25})^2$ in the ratio of 2:3. With other objectives this error is greater or less, and it is only in the case of single lenses with stops placed in front of them that the English system of measuring rapidities is correct.

The inconsistency of this system is obvions, and it can only b

* Read at the Congress of the Photographic Society of Great Britain.

avoided by consistently taking the *effective relative aperture* as a measure of the stop with all types, in the manner recommended above.

In certain cases it becomes, however, a practical necessity to indicate the apertures of the stops in terms of some absolute unit, *i.e.*, in parts of the inch, millimeters, etc. This case may arise when one and the same arrangement of stops is intended for use with objectives of different types and various focal lengths, *e.g.*, with central iris shutters, stops for sets of lenses, etc. In such cases it is necessary to calculate for each lens the relative aperture or the number of the stop, or to find these values from tables supplied by the makers.

Now instead of retaining the actual numerical values of the ratio $\frac{D}{f}$ in expressing the value of the relative aperture, it is more convenient to express D in terms of fractions of the focal length f taken as unity. Accordingly in the ratio $\frac{f}{x}$, x would be the number which indicates how many times the diameter of the effective pencil is contained in the focal length of the objective.. This value of $\frac{f}{x}$ is by the majority of makers stated on their lenses; unfortunately, there is a great diversity in the gradation of these values and in the initial value taken as the basis. Generally the f gradation is such as to make each stop correspond to half the relative rapidity of that represented by the preceding larger, and this manner of disposing the stops appears to be the only plan possessing points of practical utility.

Great difference of opinion prevails, however, in the matter of choosing the initial value. Dr. Stolze and Mr. Dallmeyer proposed $f/\sqrt{10}$, the Congrès International de Photographie of 1890 proposed $f/10$, and the majority of English makers have adopted $f/4$, the value proposed by the Photographic Society of Great Britain (U.S. No.), as their basis for the graduation of stops.

These various propositions lead to the following scales of values:—

1. Initial value: $f/\sqrt{10} = f/3{\cdot}16$.

$f/3{\cdot}16$, $f/4{\cdot}5$, $f/6.3$, $f/9$, $f/12{\cdot}5$, $f/18$, $f/25$, $f/36$, $f/50$, $f/71$, $f/100$.

2. Initial value: $f/4$ (U.S. No.)

$f/2{\cdot}9$, $f/4$, $f/5{\cdot}7$, $f/8$, $f/11{\cdot}3$, $f/16$, $f/22{\cdot}6$, $f/32$, $f/45{\cdot}3$, $f/64$, $f/90{\cdot}5$.

3. Initial value: $f/10$.

$f/3{\cdot}5$, $f/5$, $f/7{\cdot}1$, $f/10$, $f/14{\cdot}1$, $f/20$, $f/28{\cdot}3$, $f/40$, $f/56{\cdot}5$, $f/80$, $f/113{\cdot}1$.

None of these scales rest upon a theoretical basis; it is only a question of convenience and utility. The value $f/\sqrt{10}$ involves a few points of practical significance. Thus $f/3{\cdot}2$ may be considered to be the greatest desirable effective aperture for *extra-rapid* portrait lenses; $f/6{\cdot}3$ is the limit of extra-rapid instantaneous lenses; $f/18$ may be taken to represent the minimum aperture for short exposures, and $f/100$ is generally assumed to be the limit of the possibility of stopping a lens without impairing definition by the appearance of diffraction phenomena. In fine, the numbers are comparatively convenient and mostly integers and multiples of 2. The other two series do not possess these advantages, and I am, therefore, inclined to give preference to the first series.

The indication of the relative aperture of the stop is, however, not sufficient to ensure convenient use of the system of stops; it is, on the contrary, advisable to attach numbers to the stops indicating in a direct manner the rapidity corresponding to the various stops. In this respect we have two conflicting opinions. Some maintain that the numbers should advance in the ratio of the times of exposure, others prefer numbers which vary directly as the *relative luminosities*. *Per se* one view has as much claim to acceptance as the other. If, however, we consider general practical wishes, there can be little doubt as to which is the better plan. In the first place it must be admitted that in a numerical series large numbers should be avoided, and, therefore, that those stops which are most generally used and whose corresponding exposures are suitably indicated by such numbers, should be distinguished by the *smaller numbers*. Finally, it is desirable that these numbers should consist of whole numbers only.

Portrait photographers work chiefly with stops $f/6$ to $f/9$, landscape photographers and copyists at $f/25$ to $f/50$, and amateurs at $f/9$ to $f/18$, and if we remember that the stops generally used are within the limits $f/4{\cdot}5$ and $f/71$, all requirements would be uniformly considered if we were to take $f/18$ as our unit. Practically it would be immaterial whether the number varies as the exposures or the luminosities, and we should have the following series:—

1. Numbers varying as the relative luminosities—

Relative aperture...	$f/4{\cdot}5$	$f/6{\cdot}3$	$f/9$	$f/12{\cdot}5$	$f/18$	$f/25$	$f/36$	$f/50$	$f/71$
Number of stops ...	16	8	4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$

2. Numbers varying as the exposures—

Number of stops ...	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8	16

Irrespective of the ambiguity of the fractions, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, which might in error easily be mistaken to refer to the relative aperture, a system of numbering in which integers and fractions are made to enter into comparison is hardly calculated to meet with the approbation of photographers. Fractions should, as far as possible, be entirely avoided. Now the question is: Shall we take a greater or less aperture than $f/18$ as our unit? In my opinion there is no difficulty in answering this question. The small stops are those mostly used (landscape, architecture, copies, etc.), and it is particular in the case of *the* SMALL *stops that it becomes important to have a convenient means of measuring the relative apertures.* With the larger apertures this exigency does not exist in the same degree, inasmuch as these are generally resorted to in instantaneous work, where it is impossible to regulate the exposures within exact limits. In these latter cases it is a simpler plan to compensate errors in over or under exposures by suitably modifying the developer.

From these remarks we conclude that it would be rational to take $f/36$ or $f/50$ as our unit, and in order to minimise the occurrence of fractions, to let the number vary as the relative rapidities, *i.e.*, *inversely as the corresponding exposures.* The remaining two or three fractions may, to avoid ambiguity, be expressed in decimals. Taking $f/36 = 1$, we obtain the following convenient system—

Relative aperture	$f/4{\cdot}5$	$f/6{\cdot}3$	$f/9$	$f/12{\cdot}5$	$f/18$	$f/25$	$f/36$	$f/50$	$f/71$
Number of stops (Relative rapidity)	64	32	16	8	4	2	1	0·5	0·29

In primarily considering the wishes of portrait photographers $f/5$ would have to be taken as the unit, and the numbers would have to advance in the same ratio as the exposures.

The existing systems of numeration are all open to the objection that they involve high numbers which, moreover, are allotted to the smaller stops mostly used. The system proposed by the Congres International de Photographie of 1890, according to which $f/10$ is the unit, forms the nearest approach to the system which would realise the wishes which I have expressed. I should be glad to find my remarks act as a further incentive, in the interest of makers and users of photographic lenses, towards the establishment of a universal system of the designation and numeration of stops.

The Lantern Society.—On 13th, annual meeting. The report and balance-sheet having been adopted, and the officers for the ensuing year elected, the set of 100 slides received from America were shown. These slides, which are of excellent quality and interesting subjects, are available for the use of members until May next. Application to be made to the Curator, who will book dates in advance.

Hexham.—At the Council meeting on 16th inst., the result of the members' competition for work done during 1893 was announced as follows:—Class A, photograph taken at an outdoor meeting of the society, silver medal, Capt. Jas. Gibson; certificate, Mr. Stanley A. Bowman. Class B, portrait or group, bronze medal, Capt. Jas. Gibson; certificate, Mr. J. W. Crozier. For two lantern slides, bronze medal, Mr. J. Fred Russell; certificate, Mr. T. W. Milburn. Messrs. M. Auty and E. G. Lee acted as judges.

Rochdale.—An exhibition of lantern slides was given on 13th inst., and a meeting was held for the purpose of reorganising the society. The Rev. E. Brierley, of Whitworth, presided. The slides were a series lent by the Liverpool Photographic Society, and included a number of slides by the best workers of the day. The lantern was manipulated by Mr. H. Bamford, and the views were explained by Mr. T. Leach, of Smallbridge. The gathering appeared to have a very encouraging effect, for a number of persons gave in their names for membership. As a special inducement to join it was resolved to reduce the annual subscription from 5s. to 2s. 6d. The following elections were made:—President, Mr. J. A. Bright, M.P.; Vice-Presidents, Dr. Wilton Mills (Milnrow), Alderman J. R. Heape, and the Rev. E. H. Aldridge (Facit); Secretary, Mr. H. Bamford; Treasurer, Mr. John H. Hoyle (Milnrow); Committee, Messrs. Arthur W. Shaw, C. Fairbank (Newhey), G. A. Watson, F. W. Turner, F. Greenwood, R. M. Jones, J. M. L. Chadwick, W. Ingham, T. Leach, and the Rev. T. P. Spedding.

Wycombe.—On 6th inst. a "Lantern Night" was held. The President, on taking the chair, said that the subject which the slides were to represent was a trip from Windsor to Oxford by bicycle, returning by river. Mr. H. Strange, who very kindly provided the slides, gave a few remarks as the different views appeared on the screen. The route taken was *via* Windsor, Bray, Maidenhead, Marlow, High Wycombe, West Wycombe, Princes Risborough, Thame, Wheatley and Teddington, to Oxford.

Exhibitions.

SOCIETY.	ENTRIES CLOSE.	OPENS.	CLOSES.	ADDRESS OF SECRETARY.
Leytonstone Camera Club ...	—	Nov. 20	Nov. 25	A.E. Bailey, Rose Bank, South-west Road, Leytonstone.
Stanley Club	Oct. 31	Nov 17	Nov. 25	W. D. Welford, 57 Chancery Lane, E.C.
Madras	—	Dec.	—	Hon. Sec., Am. Phot. Soc., Madras.
New York	—	April 16	April 28, 1894	113, West 38th Street, New York.
Bristol	Dec. 1	Dec. 18	Jan. 22, 1894.	F. Bligh Bond, 36, Corn Street, Bristol.

THE STANLEY SHOW.

ON 17th inst. the above exhibition was opened at the Agricultural Hall, by Sir A. K. Rollit. The photographic section is a decided improvement this year both as regards the number of apparatus exhibitors and also the number and quality of the pictures, and in the way the whole thing is arranged. In Class A, Champion, the gold medal was awarded to C. Smerdon Roe, for his well-known picture, "Sedge Gatherers;" the silver medal was won by Mrs. E. Main for one of her well-known frost scenes; and the bronze by Mrs. M E. Marriott for "Roscatt." Work by Mendelssohn, Warneuke, Douglas Pym, Burrows, and Dresser was also shown in this class, and also a small print on rough paper entitled "Aylesford, Kent," which had either been roughly painted or else not properly fixed; it was two or three colours. In Class B the gold medal was won by R. S. Webster, for a charming little seascape, "When the Sun is Low," which is delicate and soft and notable for the absence of heavy black shadows. The silver was won by W. M. Warneuke, of Glasgow, for one of his seapieces shown at Pall Mall. The bronze medal goes to Prince Barma, for a pleasing river scene, a little too heavy in the left-hand corner though. Certificate to J. Kidson Taylor, for 72, an exquisite warm evening scene, and to J. H. Anderson. Many of the prints in this class were handicapped by falsity of tones, intense black shadows, and general harshness.

Class C is devoted to lantern slides, which were not judged at the time of our going to press. Class D, portraiture, figure study, animals, and genre: T. E. H. Bullen deservedly wins the gold medal for a charmingly natural little picture, "Dividing the Spoil;" this is full of quiet humour. Two silver medals are awarded, one to Prince Barma, for a soft well-modelled study of an Indian child, and to Lutzel Bros., for a very good portrait in platinum. C. E. Wyrall takes bronze for "Is 'oo Cross?" a well-executed but difficult study of a little child speaking to a dressed-up dog. A certificate is awarded in this class to W. J. Byrne, of Richmond. In Class E, hand-camera work, we have no hesitation in saying there is the strongest work we have yet seen by hand-camerists; there are really very few mere shots, and some of the medalled pictures are first-class. Mr. Sinclair takes the gold medal for some of his charming southern bits Mr. J. Kidson takes the silver medal, and we think that had he sent in four prints only instead of four frames he would have run hard for the gold medal. Mr. C. Knight takes the bronze for some very clever shots at soldiers on the march, which are not only well selected but also characterised by absence of heavy black shadows. Mr. C. Job and J. H. Gear take certificates. Other good work is by Coulthurst, Shaw, and Welford, and we congratulate the latter on the great departure he has made, and would only find fault with his over-printing. Class F, beginners: this is defined as those who have commenced photography since 1890. The silver medal is won by J. H. Gear, for a very fine enlargement of Handel's organ, which is just a trifle heavy in the shadows. The bronzes go to Stewart Smith for a very good interior, "The Glasgow Art Club;" and to A. Kemp. A certificate was awarded J. H. Anderson. Class G, for cyclists, silver medal to E. E. Barron, for four pretty little Norway scenes; Mr. W. B. Dart taking bronze for another set of four which we think are handicapped by being so low in tone. A certificate goes to Harry Wade. In Class H, the special lantern was awarded to the South London Photographic Society, and the silver medal for the best individual picture is for "A Marshy Swamp," by C. Tylee, of the E. London.

In the apparatus section, although everything was not quite ready, we could see enough to say there are several good things to look at

Platt and Witte, of Birkbeck Road, Dalston, have a very good show of lanterns and fittings of all sorts, and dead black for interior of camera and other objects, lacquers, etc. The special feature which we shall notice next week is the Lecturer's Science Lantern.

Holmes and Watson, of Danbury Street, Islington, make a special show of their huge camera for process work, which we have before described. Matthew's portable lantern has yet another improvement, in that a new dissolving flap is added, which is actuated by the same mechanism as the changing of the slide. It is now also made with aluminium fittings and interchangeable jet, and we hear that a specially arranged oil lamp will also be adapted to it.

Hannam and Co., of Soho Square, W, make a brave show of Kensington albums, and their special mounts for chloride prints and exhibition purposes; also they have a good selection of Christmas and New Year mounts with mottoes, and a neat and well contrived vignetting frame.

Wormald and Co., of New Malden, have the Photomnibus camera and prints taken with it, a lot of small and useful accessories in the shape of lantern masks, binding strips, stereoscopic masks, and a new 7s. 6d. camera, which is constructed to take four circular pictures on a lantern plate.

The Cresco-Fylma Company, of Surbiton, show the results of their process, both in the shape of prints, opals, and as decorations for vases, plaques, etc.; but a distinct novelty of considerable utility as a decorative medium is the transference of stripped films to material or opal glass coloured with gold, and these represent most faithfully the effect of gold articles.

W. Wray, of North Hill, Highgate, has a case full of his well-known lenses, both in brass and aluminium fittings.

Adams and Co, of 81, Aldersgate Street, E.C, make a brave show of every requisite, from dark-room sinks and complete outfits to retouching pencils. Special features are the fixed and focussing and twin-lens Ideal. The Adams Hand-camera, the latter having a swing-back, rising and cross fronts, and special Hill and Adams shutter, with pneumatic release. This firm are placing on the market two new hand-cameras of striking design, which we shall notice in detail presently. The one, the Vesta, is a folding aluminium camera which, when closed, measures 7¾ by 4½ by 1½ in., and only weighs 1 lb. The other is a new film camera to carry seventy-two cut films, without any backing, sheaths or slots or notches. This we shall also notice later. A special move has been made with regard to prices, which are now all at lowest store prices.

John Piggott, of Cheapside, shows all requisites, the J. P. hand-camera, dark-room glasses, etc.

R. and J. Beck, of 68, Cornhill, E.C., have a stall in the Moorish style of architecture and colouring, which is at once striking and effective. Special show is made of the No. 2 Frena for quarter-plates; celluloid dishes, developing clips, and print and negative albums are also shown, and transparencies from Frena negatives are inserted in the walls of the stall and show up well at night, and speak well for the capabilities of the camera; some good enlargements also being shown.

Sands and Hunter, of Cranbourn Street, make a big show of cameras, lanterns, and lenses, and amongst them we noted the Nalda, a new film camera for eighty cut films, which are placed in cardboard holders, which after exposure are pulled on to the top of the camera. It has a rectilinear lens, two finders, and an adjustable shutter, and is a well-made capable instrument. Here also is the latest pattern of the Allendale lantern, which has been still further improved and forms a lantern, a dissolver, reading lamp in one, and is so compact and portable that it can be supported on an ordinary tripod.

Burroughs and Wellcome, of Snow Hill, E.C., have a case full of their useful photographic tabloids of all sorts, and several prints produced by aid of the same.

Morgan and Kidd, of Richmond, have a big show of plates and bromide paper, carbon and bromide enlargements. But the working of collotype with the aid of a hand-press is the principal attraction here, and some good prints are to be had for the asking.

Morley and Cooper, of 70, Upper Street, Islington, have a stand filled with cameras, lanterns, lenses, and other accessories.

W. Miller and Co., of 18, Portland Street, Commercial Road, E., show numerous varieties of their Unique hand-camera, and which, since we saw it last, has been considerably improved, and we shall notice this in detail shortly. It is light, effective, and reasonable in price

East London.—On the 14th inst, Mr. M. A. Wilkinson in the chair, after the preliminary business had been disposed of, the chairman called upon Mr. S. Herbert Fry for his valuable and practical demonstration on the Paget Prize printing-out paper. The lecturer prefaced his remarks by eulogising the great advantage that this paper would confer on all those—amateur and professional alike—who had only a minimum of time to devote to their printing. In reply to a question from one of the members as to a good method of intensification for gelatine negatives, he said that after the usual bleaching the negative should be placed in a gold bath and then redeveloped. A sample of Beacham's patent spotting and retouching medium and transparent water-colours was handed to a member for report.

"AMATEUR PHOTOGRAPHER"

HOLIDAYS WITH THE CAMERA

(LATE "PRIZE TOUR COMPETITION"),

HELD ANNUALLY.

RULES AND CONDITIONS

Prizes:—Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past Prize-winners.*

Subjects.—All Photographs are eligible that have been taken during the "Holidays," but must be Landscape or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but not *Portraiture*, *Figure Study*, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the "Amateur Photographer"; other Photographs will be returned if stamps be enclosed to cover postage.

Number.—Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole.

Descriptive Notes.—Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words.

Date.—All Photographs must be received on or before the **31st December, 1893.**

The Photographs must be endorsed "Holidays with the Camera," and addressed to:

The Editor, "Amateur Photographer,"
1, Creed Lane, Ludgate Hill, E.C.

COMPETITOR'S DECLARATION.

I_____ *of* _____

_____ *beg to send herewith* _____ *Photographs to be entered in the "Holidays with the Camera" Competition. In the event of a Prize being awarded to me, I agree that the Photographs shall become the property of the Proprietors of the "AMATEUR PHOTOGRAPHER," and in the event of my being unsuccessful I request that they* †_____

I also declare that the whole of the work on the Negatives and Prints was done by myself, and that I am a bona fide Amateur Photographer.

_____ *1893.* *(Signed)* _____

* This term does not apply to those who have only taken Prizes in the "Amateur Photographer" Monthly Competitions.
† Here insert, "be returned to me," or "be retained for the 'Amateur Photographer' Hospital Collection."
The Proprietors of the "Amateur Photographer" will not be responsible for the safety of any Negatives or Prints sent in to the Editor, although all reasonable care will be taken of the same.

[This Form and Declaration to accompany the Photographs sent for Competition.]

HOLIDAYS WITH THE CAMERA.

(FOURTH YEAR.)

Competitor's Entry Form.

Title of Manuscript _____

NUMBER AND TITLE CORRESPONDING WITH SAME IN MS. AND ON PHOTOGRAPH.	LENS.	PLATE.	STOP.	EXPOSURE	DEVELOPER.	PRINTING PROCESS.
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						

NOTE.—For Declaration see back of page.

Holiday Resorts and Photographic Haunts.

WELLS AND GLASTONBURY.

By Eos.

Wells can be reached from London by either the G.W.R. or the L. and S.W.R., but in neither case is the journey completed without changing.

The city, which is situated at the foot of the Mendip Hills, derives its name from certain springs which rise in the garden of the Bishop's Palace.

Leaving the G.W.R. station, the first object which arrests the eye is the grand Perpendicular tower of St. Cuthbert's Church, rising far above the neighbouring houses. This tower is considered to be exceeded only in beauty in Somerset—a county noted for fine church towers—by that at Wrington. A view from this point can be obtained in the early part of the afternoon. Proceeding onwards we pass the south side of the church. Using a mid-angle or wide-angle lens, a photograph of the whole of the south side of the church, with the tower, can be taken from the south-east about 8 to 10 in the morning. A wide-angle is the most useful lens for most of the subjects here. Passing along High Street, the cathedral towers come in view as we near Market Square. The cathedral towers can be included in a view of the market-place, with the water conduit and the two gateways known as Penniless Porch and the Bishop's Eye, about 2 or 3 in the afternoon, when the shadows of the shops on the south do not encroach too much on the roadway. The cathedral can be reached either through Penniless Porch or by Brown Gate, also known as the Dean's Eye, a 15th century gatehouse in Sadler Street. The inhabitants refer to all the gates as "eyes," a peculiarity not met with, I believe, elsewhere. By Brown's Gate the full grandeur of the west front, with its flanking towers and the great central tower, appear to the greatest advantage, together with the Deanery, the Theological College, and the Chain Gate crossing the Bath Road. The west front, which was restored a few years ago, is built in the purest style of Early English architecture, and is considered to be unrivalled in beauty among the English cathedrals. It is 150 ft. in breadth, and is divided into nine tiers containing, in niches and quatrefoils, about 300 statues, many being life size or colossal. About three o'clock in the afternoon, when only a small strip of shadow is thrown by each of the projecting buttresses, is the best time to photograph this front. Any lens can be used according to fancy; the lawn in front permitting the use, if desired, of a long-focus lens. In the morning, about seven or eight o'clock, a view of the north-eastern portion of the cathedral, including the octagonal Chapter-House and the Chain Gate, can be taken from St. Andrew's Street. A photograph of the eastern end of the cathedral and the Lady Chapel is to be obtained about ten o'clock, from a road running eastwards at the foot of Tor Hill.

About two o'clock the south side of the cathedral and the ruins of the banqueting hall in the palace grounds can be dealt with from a footpath running from the south-west corner of the palace moat to Dulcote. About this time the cattle usually group themselves in the foreground of the picture.

The Bishop's palace is approached from the city by the Bishop's Eye, on the east side of the market place. It is surrounded by a wall and moat. The grounds are thrown open to the public between twelve and three. A view of the west front, together with Trinity Chapel, is to be got from the lawn about two or three. About twelve o'clock the entrance gate with the cathedral towers can be dealt with from the lawn. The ruins of the great banquetting hall can about that time be photographed from the terrace. The exterior of the gate-house, used as a lodge, the flanking towers and drawbridge over the moat are lighted about four p.m. Owing to the luxuriance of the foliage, this is best photographed in the spring. If permission can be obtained, about nine or ten o'clock a most effective picture of the eastern end of the cathedral, with its reflections in a pool which supplies the moat, can be made. A little earlier, views of the north side of the palace abutting on the moat, and also of the entrance gateway and drawbridge are obtainable.

The interior of the cathedral will probably be approached from the west door. The nave, which is very striking, should be photographed from the west, in the afternoon. A cloudy afternoon is the best, as strong patches of sunlight impair the result. I have seen a view of the nave from the east; the result was most tame and ineffective. Passing through the organ-screen, the beautiful choir, with its Jesse window and graceful tabernacle work lining its walls, is seen. Owing to a peculiar arrangement of the piers, the columns of the retro-choir and lady chapel are seen above the low altar-screen. The choir is best photographed from either the dean's or the preceptor's stalls, but owing to the fact that the clerestory windows on the south have been painted to stop the glare of light from that direction, a long exposure is necessary. From the south choir aisle a view of the retro-choir and lady chapel is obtainable. From the same aisle Bishop Beckington's and Bishop Harewell's monuments can be photographed, the view terminating with the monument under the east window and the shrine of Bishop Drokensford. There are a considerable number of effigies of various bishops to be found in the eastern part of the cathedral. The undercroft or crypt to the chapter house is reached from the north choir aisle. The chapter-house is reached by a staircase from the east side of the north transept. It is octagonal in form, and the roof is supported by a central pier of columns of Purbeck marble. The style is of the Early Decorated period. Nine o'clock in the morning is the best time for this, halation being avoided by the buildings outside the windows. The famous Glastonbury clock is situated on the west side of the north transept. This also is morning work, but in all probability the photographer will not consider it worth while using a plate upon unless he wishes to record a curiosity.

The north porch, built in the Transitional style in 1150, is best photographed in the very early morning in summer or late afternoon. St. Thomas's Church, in the street named after the same saint, is afternoon work, as is also the Theological College, owing to the shadows cast by the cathedral. The south side of the Deanery is available most of the day. Ten to two is a good time for the Vicar's Close, entered from a gateway in the Bath Road, just through the Chain Gate. About four or five o'clock a general view of the city, including the cathedral, can be obtained from several points on Milton Hill, but absence of mists is necessary to secure success. Fine sunset effects are said to be obtainable from this point.

The only dark-room accommodation is at the two photographic establishments in the city. The amateur will therefore only be able to change when there is no work in hand in those dark-rooms. Plates can only be obtained from the professionals, but supplies can be got from either Bristol or Bath.

The railway service on both lines cannot be termed good, and the tourist is advised to consult the time tables before making short trips in the neighbourhood.

Cheddar Cliffs are about eight miles distant on the Great Western Railway. The gorge in the Mendips here runs north-east to south-west. The work here will therefore be best done in the afternoon.

Glastonbury is six miles away on the Somerset and Dorset Railway. The ruins of the Abbey can be photographed on paying the visiting fee of 6d. at the entrance. Morning is the best time for the general view westward, and also the interior of the beautiful Norman chapel dedicated to Joseph of Arimathea. On the south side of this chapel is a good doorway, but that on the north is considered the finest Norman arch in the kingdom. Owing to the fact that the sun very rarely reaches the latter, its ornamentation is very black and dirty. This can be photographed late in the afternoon (5 p.m.) The south door will then not have any sun on it, and is best taken then or in a good diffused light. The Abbots' Hostelry (now the George Hotel), a fifteenth century building, is on the south side of High Street. A little eastward on the same side is the Tribunal, now occupied by a lawyer. St. John's Church is still further east. Its south side is open to the street, and is best taken from the south-east about 9 or 10 in the morning. The tower is but little inferior to that of St. Cuthbert's Wells. St Benedict's Church will be seen on the way from the station. The "Red Lion," in the Market Place, was formerly the great entrance to the Abbey. The Abbot's kitchen is still intact in the field adjoining. Permission to photograph is to be obtained on payment of 6d. at the Unionist Club. Morning or afternoon will do for this. In a shop window on the left in St. Benedict Street going from the station, the following legend will be seen:—"Dark-room for tourists."

Competitions.

	Subject.	Latest Date.	Entry forms to be had from
Am. Phot. Monthly Lantern Slides	Portraiture	Dec. 14	Printed in weekly issues
Am. Phot. Holidays with Camera	Photographs taken during holidays.	Dec. 31	Will be printed in paper
Advertisement Competition	—	Nov. 30	None required
Optimus' 100 Guinea Competition	All Classes	Dec. 31	Perken, Son, and Rayment

Societies' Notes.

By a faulty arrangement of the report of the Aston Photographic Society, in last week's issue, a slight mistake appeared *re* "Dry Collodion Lantern Plate Re-developer," which should have appeared thus:—

RE-DEVELOPER.

No. 1.

Pyrogallic acid	10 gr.
Citric acid	25 „
Water	2 oz.

No. 2.

Silver nitrate	20 gr.
Distilled water	2 oz.

To half an ounce of No. 1 add 30 drops of No. 2.

OBAN.—An industrial and fine arts exhibition, the largest ever held north of Glasgow, was opened at Oban on 15th inst. Section IV. embraced photography, and in the amateur local competition the following awards were given, viz.:—Class I., landscape, first prize, certificate, Mr. Michael A. Scott, Oban, President Oban Amateur Photographic Society; second, ditto, Mrs. Gilmore, Kinlochbeg. Class II., seascape, first prize, certificate, Mr. M. A. Scott, Oban; second, ditto, Miss S. D. Anderson, Ardsheal. Class III., figure study or portraiture, first prize, certificate, Mrs. Gilmour, Kinlochbeg; second ditto, Miss S. D. Anderson, Ardsheal. Class IV., interiors, first prize, certificate, Mr. M. A. Scott, Oban; second ditto, Mr Samuel Lawrence, Oban, Secretary Oban Amateur Photographic Society. Class V., snap-shots (set of four), first prize, certificate, Mr. M. A. Scott, Oban; second, ditto, Major Meares, Acharra. For best photograph in show, silver medal, Mr. M. A. Scott, Oban; for second best ditto, Mrs. Gilmour, Kinlochbeg. The exhibition remains open till 30th inst.

THE Rochdale Photographic Society has had a very successful year, and has managed to almost wipe off the balance on the wrong side left from last year, and this, in the face of the reduction of subscription to 2s. 6d. instead of 5s., is distinctly satisfactory.

THE Manchester Amateur Photographic Society will hold their annual exhibition from December 12th to 16th.

THE North Middlesex Photographic Society will hold their annual exhibition and conversazione on 28th inst., from 6 p.m.

THE HALIFAX CAMERA CLUB.—A thoroughly enjoyable entertainment was provided in the Mechanics' Hall on Thursday night, November 9th, by the Halifax Camera Club. The club's headquarters are in Crossley Street, where meetings are held and experiments conducted. As Mr. J. Ingham Learoyd, the active President, explained to the large company which assembled, the object of the gathering was twofold; to interest visitors in photography, and so draw new members, and also to add to the funds of the club. The members had contributed a most interesting collection of apparatus, work produced by themselves. Mr. Thomas Illingworth, of Crown Street, furnished a large number of well-finished photographs, many of large size, and Messrs. Thomas Illingworth and Co., of London, had also sent some charming exhibits. These exhibits, together with examples of electro blocks, photogravure, etc., the most improved cameras, and hundreds of pictures done by members, were exhibited on tables placed along the sides and across the room, while the tables were lit with lamps and decorated with plants, giving altogether a very pleasant effect. Members were present to answer questions and give any information desired respecting any of the objects or the various processes of photography, and more than this, a dark-room had been fitted in which the work of developing, fixing, etc., was practically demonstrated. During the evening two exhibitions of magic-lantern views, also done by the members, were given. The proceedings were varied with selections of instrumental music by Mr. E. J. Walker and a party of friends, and songs by Mr. J. C. Marchant and Mr. A. Munday. Mr. C. Thomas ably officiated as accompanist. Mr. H. Walsh, of Thornleigh, Halifax, is the Hon. Secretary.

AT the Central Photographic Club on 15th inst. there was a good "smoker." The Hon. Secretaries had provided a good programme, Mr. W. Fenton-Jones opening the proceedings with a selection. Mr. Baynton gave an excellent solo on the cello (by Whitehouse), and later on dressed up in the full coster costume and sang the "Nipper's Lullaby," keeping up the illusion by having a genuine cradle and a bottle of milk. Then "up came Mr. Smith with his little lot," telling a very truthful tale, the veracity of which he vouched for. Mr. Tom Smith then warbled "The Longshoreman." Mr. Danell was to the fore with an after-dinner speech, which Mr. Oakden enlivened with frequent "Hear, hear." Mr. Wilkinson sang "Way Down upon the Swanee River" with telling effect, the chorous being taken up grandly, even to the silent "burnt cork" chorus. Mr. Herbert Fry sang, and was followed by Professor Koering, Messrs. Brookes, Vincent, Nunn, W. Fenton-Jones.

Societies' Meetings.

Coventry and Midland.—The annual meeting was held on 14th inst. The balance-sheet showed a deficiency, which had been reduced by donations from Messrs. W. H. Ballantine, M.P., Gulson, Tomson, Orton, and Astley. It was decided to give a lantern entertainment and concert at an early date to increase the funds of the society, the expenses being guaranteed by a majority of the members present. Mr. W. Andrews was re-elected President, Messrs. H. Mountfort and A. B. Clarke, Hampton House, Coventry, were elected Hon. Secs., and other officers were appointed.

Durham (Camera Club).—On 13th inst. the President, Rev. H. E. Fox, M.A., in the chair, Mr. L. E. Morgan, from Messrs. Fuerst Brothers, gave a most able and interesting demonstration on Hauff's developers, amidol, metol, and glycin, explaining their uses and capabilities. In the case of amidol and metol he gave practical demonstrations of their adaptability to all kinds of work, and developed negatives, bromide paper, and lantern slides.

Guildford.—A meeting was held on 7th inst., Mr. Russell presiding. The object of the gathering was to hear a lecture on "Lantern-Slide Making" by Mr. S. Herbert Fry, of the Paget Prize Plate Company, Watford. This proved most instructive, the interest of the audience being well sustained by the exhibition of slides illustrative of the subject of which Mr. Fry was treating and the actual development, toning, and fixing of several plates, which were handed round for inspection at the several stages of the process, and were finally shown in the lantern.

Hackney.—On 14th inst., Mr. R. Beckett in the chair, members' work was shown by Messrs. Roofe and Sodeau. Several members showed specimens of lantern slides on the new Barnet plates. The results were very good, and included a great range and variety of tone. Mr. Roofe showed prints of printing-out Paget and P.O.P. papers toned with 1 oz. and ¼ oz. acetate of lead respectively. There appeared to be no difference in results. The prints required a little deeper printing than for sulphocyanide toning. Mr. Sodeau showed a platinum print torn in four pieces, toned with uranium to warm tones, three quarters being toned 1½, 3 and 12 hours respectively. The tone that pleased most was that subjected to three hours' toning. Mr. Smith asked if there was any remedy for reducing an over-printed P.O.P. print to a normal print. Farmer's reducer was recommended. Mr. Barker asked how long Alpha paper would keep under ordinary circumstances. Mr. Beckett stated he had used it five to six years old. Mr. Roberts said he found the edges turn yellow after keeping some time. Mr. H. M. Smith, of Messrs. Eastman's, then proceeded with a paper on enlarging generally, and dealt with some very interesting points in connection with same, illustrated by diagrams. A demonstration was then given, and some excellent results were obtained.

Leytonstone.—On the 1st inst., Mr. A. E. Bailey in the chair, Mr. J. Carpenter gave a most interesting evening on "Flower Studies, and how to Make them." He observed that all flowers were not suitable, and although he had gone to great trouble to secure some of the most beautiful exotics, he found the well-known flowers, such as the primrose, lily of the valley, etc., were more appreciated by the general public; light colours gave the best result; arrangement and grouping were a most important factor to success; no hard and fast line could be laid down, but much must depend on the individual taste. A number of prints were passed round showing good and bad grouping. Lighting and background were next dealt with. For plates, he preferred isochromatic, which were quite indispensable for this work; pyro ammonia was his favourite developer. Some negatives were passed round showing the density required, and a few hints as to exposure concluded a very interesting lecture. About fifty of his well-known and beautiful lantern slides were next put through the lantern.

Liverpool (A.P.A.)—A lecture on "Life in Tripoli" was delivered on 15th inst. by Mr. G. E. Thompson under the auspices of the above society. Mr. Paul Lange, in the absence of the President, occupied the chair. Mr. Thompson paid a visit to Tripoli, in Barbary, last April, and secured a large number of admirable photographs, about 140 of which were shown on the screen by the aid of Messrs. Archer and Son's fine limelight lantern. On 16th Mr. Bynoe

gave a lecture on "Hand-camera Work," with special reference to the Frena system. He illustrated the working parts by diagrams on the screen, showing the improvements in the No. 2, the principal being the size, quarter-plate, and the alteration in the shutter. Also the use of magnifiers for near objects. He explained and illustrated the use of the swing-back. After answering some questions, he exhibited some specimens of pictures taken with the camera.

Woolwich.—On 9th inst., to see the lantern slides that had been sent in for criticism. About 160 were passed through the lantern, after which a set of sixty slides taken by members of the Manchester Camera Club were shown and greatly applauded. It added very much to the interest centred in this set that Mr. W. H. Dawson, who acted as lanternist, was proud to announce that he was a Manchester man, and as the slides were put through he gave the audience a lot of information respecting the spots chosen for illustration.

SOCIETIES' FIXTURES.

Nov. 23.—Tooting—"Double Printing," Mr. Child.
" 23.—Liverpool—"Paget Co.'s Printing-out Specialities," Demonstration, Mr. S. H. Fry.
" 23.—Hull—"Flash-Light Experiments," Mr. J. Pybus.
" 23.—Leeds—"Lantern-Slide Making by Reduction."
" 23.—Liverpool (Camera Club)—Exhibition of Members' Lantern Slides.
" 23.—Woolwich—"Cresco Fylma," Mr. A. Hill
" 24.—Sutton—"Enlarging and Reducing," W. Griffiths.
Nov. 24.—Holborn—Lantern Night.
" 24—Halifax—Exhibition of Amateur Photographer 1893 Prize Slides.
" 25.—Huddersfield—Members' Work, and "History of the British Flora," A W. Sykes.
" 25.—Hexham—Lantern Evening.
" 27.—The Lantern Society—"Making Lantern Slides," Mr. S. H. Fry.
" 27.—Goldsmiths' Institute—Exhibition.
" 27.—Leamington—Annual Meeting.
" 27.—Midlothian—"Enlarging," by Dr. Marshall.
" 27.—Richmond—"Films," Mr. C. H. Davis.
" 28.—N. Middlesex—Annual Exhibition and Conversazione.
" 28.—Hackney—Smoking Concert.
" 28.—W. London—"Telephotography," Mr. T. R. Dallmeyer.
" 28.—Herefordshire—Lantern Evening.
" 28.—Hove—*Photography* Prize Slides.
" 29.—N. Middlesex—Annual Exhibition.
" 29.—Croydon—"Modern Developers," Mr Leblanc.
" 29.—Photographic Club—Lantern Meeting.
" 29.—Ashton-under-Lyne—Exhibition of Negatives and Prints.
" 29.—Leytonstone—Lantern Evening.
" 29.—Halifax—Demonstration on "Paget Prize P.O.P. Process and Lantern Slides."
" 30.—Aston—"Practical Enlarging."
" 30.—Dublin (Camera Club)—"London to Queenstown by the American Mail," Mr. Roche.
" 30.—Liverpool—"Quiet Corners in France and Italy," Mr. W. P. Christian.
" 30.—Hull—"Frena Hand-camera." Messrs. Beck and Co.
" 30.—Bradford—"Lantern Slide Making," Mr. S. H. Fry.
Dec. 1.—Lewisham—"Modern Plate Making," Mr. H. O. Drake.
" 1.—Holborn—"Paget Prize Lantern Slides," Mr. S. H. Fry.
" 1.—Nottingham—Exhibition of American Slides (1893).
" 2.—Holborn—Annual Supper at Anderton's Hotel.

To Correspondents.

All communications for these columns are to be addressed to The Editor, "Amateur Photographer," 1, Creed Lane, Ludgate Hill, London, E.C.

QUERIES.

6174. **Ratcliffe and Kingston-on-Soar (Leicestershire).**—Can any reader kindly give me any information as to the date or other particulars respecting the old churches at the above places?—J. B.

EDITORIAL.

SPECIAL NOTICE.—Letters requiring an answer in this column must be received by the first post on the Tuesday morning prior to publication. The Editor cannot answer letters by post except under exceptional circumstances.

In an answer to a correspondent *re* the Allendale lantern, we gave the wrong address of maker. It should be Joseph Levi and Co., 40, Furnival Street, Holborn, London, E.C. Please note.

C. S. S. has been using uranium for toning bromide prints and find his whites stained. We suggested that all the hypo was not out, but after twelve hours' washing our correspondent assumes this to be wrong. We say not proven. After washing the prints thoroughly in running water for half-an-hour soak in acid and alum solution, or a weak solution of iodine, wash, and then try. Before using your ferridcyanide give it a wash in water to take off the crust of lower salt. Do you use acetic acid? If not, add ten drops of glacial acetic acid to every ounce of toning solution.

J. F. Lloyd.—Prints received too late for notice this week.

F. G. Clarke.—(1) Can I have a negative amplification fitted to any rectilinear lens? Yes; Dallmeyer, Newman Street, Oxford Street, makes these. We have sent you on photo journal. The articles on architecture will not appear till next year. Your prints are very good. The only one that we can find any fault at all in is No. 3, and surely the camera was not straight in this; it looks as though there was a slight leaning.

Amat. Photog.—The idea is good most decidedly, but whether it is commercial or not is another matter. We can see that commercial travellers, agents, etc., would find it very useful, but we also see considerable difficulties, especially in preventing staining. We should advise you to stick to plates for the present anyhow. The full details of the printing process you want were given in the "A. P. Annual" for 1892, p. 93, where you will find three formulæ and Burton's notes on the same. It is, unfortunately, too long to print here.

J. W. Cufley.—Many thanks for prints, which will be duly sent on.

Perplexed.—(1) Yes, it will do all that is claimed for it. (2) Is there any test to see whether a print is free from hypo? Stir one part of arrowroot with a little cold water, add 100 parts of boiling distilled water, and then 20 parts of potassium iodide; dissolve 1 part of iodine in 25 parts of alcohol; of this add 2·5 parts to the starch solution, and make the mixture up to 1,000 parts with distilled water. This solution will keep about a fortnight. Take two clean test-tubes, put in each some of the blue iodide of starch solution; to the one add a definite quantity, say 30 minims, of water from the tap; to the other, the same quantity of drainings from the prints. By gently shaking and holding both tubes against a piece of white paper, one is able to detect at once whether the one to which the print drainings have been added is at all decolourised, this being the action of hypo on iodide of starch. (3) What is the best method of telling whether a mount contains hypo? Cut the mount up into small pieces, and boil in distilled water in a test tube, then drain off some of the water and apply above test.

Living Worry.—(1) Utterly impossible to criticise a bit of a print. It seems to have double outlines, to be under-exposed. (2) Negative over-exposed, and we should say fogged in developing; print flat and poor. (3) Utterly beyond criticism. (4 and 5) See notes to No. 2.

W. Cockrell.—We had to pay one penny for your letter, as it was over-weight. The negative was smashed into hundreds of bits, still we could see that it was very deeply stained with pyro, and we are afraid that there is nothing that will remove it. The only thing you can do is to print from them as they are. They will take a long time, but still it is possible to get good results from them.

F. Betley.—Sorry that slides were out of order. Will see what we can do.

A. D. Guthrie.—We put right this week. If report was received late it might get held over till this week. We do not wilfully do such things, but now and then we find it difficult to cram matter sufficient for twenty-four pages into sixteen, and then something has to go.

Kallikrates has a small quantity of phosphate of gold, and wishes to use it for toning chloride and plain papers. (1) So far as we are aware, there has been no mention of the use of phosphate of gold *per se* as a toning salt, and we can only suggest that it should be dissolved in water in about the same proportion as the ordinary chloride, and rendered distinctly alkaline by the addition of a little carbonate of soda, and used for toning; it could replace the chloride in the ordinary sulphocyanide or the combined bath for gelatino-chloride paper, and for plain paper it should merely be made up to any of the ordinary formulæ of alkaline baths, but the standing rule that toning and fixing baths for plain paper must be half the ordinary strength still holds good. Last year Mercier brought phosphate of gold, so called, on the market, but Eder states that this is nothing but the ordinary phosphate of soda and chloride of gold. (2) "What quantity of a liquid constitutes a minim?" A minim is the smallest measure (of a liquid) in ordinary use, and is, of course, the 480th part by measure of a fluid ounce. Minim measures, or dropping tubes graduated in minims, can be obtained at nearly all chemists'. One minim is the measure of 0·9114583 grains of water. If thie correspondent wishes to know, and we rather fancy he does, how many drops are equal to a minim, we are sorry to say that we cannot spare the room to give him a table, as the size of drops varies with almost every liquid. (3) How does potassium oxalate operate when forming part of the platinum toning bath? Undoubtedly the origin of using potassium oxalate in the platinum toning bath was the application of the old platinotype developer. Clark states ("Platinum Toning," Hazell, Watson, and Viney, Ld., 1s.) that this salt may be used in place of an acid, and gelatine is not so readily stained. Mercier states ("Virages et Fixages") that the platinum is more readily deposited when an oxalate, formiate, etc., is present. It is one of our rules that correspondents should send name and address, not for publication, but for our own information.

J. H. Hart has been photographing some books in fine bindings, and sends us one or two results, and has met with a difficulty in lighting. In the first place polished leather is exceptionally difficult to photograph properly, not only on account of its colour, but the reflections are very difficult to avoid. By far the simplest and best light to use is artificial light, either gas or oil lamps. The lights should be about one foot from the books on each side, and a dark screen should be placed round the light, so as to prevent it from shining direct into the lens; this screen may also be used as a reflector, so as to throw more light on to the books. Working in this way it is possible to arrange the lamps so that there are no reflections, and these are also less evident if a thin sheet of tissue paper is placed between light and object. For leather isochromatic plates are absolutely essential, and are also advisable too, if artificial light be used, on account of the reduction in exposure. Both the prints sent show unequal lighting of the books, which is unavoidable if an ordinary room or window be used. For pale blue leather it would be advisable sometimes to use a pale yellow screen, either in the lens or between the lights and object, so as to render the blue more correctly. This correspondent states that he wants to match the tint of the leather in the print, and that sometimes when printed the image is just right; can this colour be preserved? It is almost an impossibility to match the colour of the freshly printed paper during toning. If facsimile reproductions are required in colours, the best thing to do is to obtain a negative in the ordinary way, and print very lightly on plain paper just till all the details are distinctly visible, then fix and wash, and afterwards paint the prints in water colours. The landscape is over-exposed, has too much foreground and too much sky—you have attempted too much, little bits nearer to you will pay better than such large stretches. So far as we know, there is no particular work on copying, but there is a magnificent work on some old bindings in the British Museum, which is illustrated with some coloured collotypes, and we have some very good examples of these, which are at your service, and we shall be glad to help you further if we can. Ferrous oxalate could possibly be used for developing gelatino-chloride paper, but we think better results would be got with hydrokinone.

Herald.—Much obliged to you for calling our attention to the mistakes. We have not been on the spree lately, as you suggest. Pray, do you imagine the Editor sets the paper up in type?

H. Perrett.—Your negative is under-developed. Had you continued development you would have obtained all the density requisite. This correspondent asks—Do certain lenses give flat negatives? A lens may give a flatter negative than another if not perfectly corrected, and also if it suffers from flare, or what would be flare if confined to the centre; that is, if a lens suffers from reflected light, due sometimes to the mounting, etc.

Red-Brown asks how to obtain a green tint on Alpha paper. Green tones on this paper are easily obtainable by rather a short exposure and using a ferrous-oxalate developer strong in bromide, but we should prefer to obtain a green tint by developing, fixing, and washing in the ordinary way, then dipping the print into very weak iron solution, and then into ferridcyanide of potassium. This tints the whole paper, but a green image may be obtained by treating the print with—

Lead nitrate..	20 gr.
Potassium ferridcyanide	30 ,,
Water..	1 oz.

Washing thoroughly and then immersing in a 10 per cent. solution of neutral chromate of potash; washing

again and treating to a 10 per cent. solution of ferric chloride. Might we suggest that the carbon process will give the best results, with green or seascape tissue?

F. A. C. asks for the best plate for taking portraits in a room. Any of the very rapid plates now on the market can be used for this purpose, and the best is merely a matter of personal opinion.

BELVIDERE.—(1) Slightly under-exposed, much over-printed, the overhanging boughs are too obtrusive, nor can we see what you intended to be the principal object; too much uninteresting foreground. (2) Negative wants intensifying, or else printed in the sun; over-toned. Wants one and a half inches off foreground and an inch off sky. (3) Over-printed and over-toned. (4) Ditto. We hardly see what the ugly bit of wall on the right is for. Why could you not have got in front of this and taken the church larger, or else gone across the road and cut this out altogether if you did not want to get too close? (5) Negative weak, or printed in too strong a light, and wants clouds. You had better send us up, say, half-a-dozen prints printed to various depths, and we can then tell you which is right. What developer, etc., are you using?

F. BETLEY.—We are very sorry, and will see what can be done to put them right.

E. P. VULLIAMY.—We cannot say we admire your prints; they strike us as being over-printed considerably. Have you tried printing through green glass? If you want really black tones on printed-out paper the negatives must be very strong, and plain paper gives the best results under green glass with uranium toning. You can mix the sulphocyanide and hicarbonate if you like. In using the sulphocyanide bath again it is advisable to add half the amount of sulphocyanide and the full quantity of gold. You could use a negative meniscus as you say, but to get covering power you would have to stop down. Will you wait a little while and we will see what can be done for you?

F. T. C.—We cannot suggest a better camera than No. 1; get it by all means.

J. B.—We are under the impression that we have already answered you either in the paper or by post. We were unable to trace the article you mention. Have you no access to a public library where you can turn up guide-books or archæological works? Kelly's County Directory even would tell you all you want to know.

OMEGA.—We will think your letter over and write you. Please send post-card and let us know whether greenhouse has a ridge roof or whether it runs down from side of house in one slope.

C. E. FORTUNE has a Dallmeyer lens with stops numbered 7 5, 10, 15, 25, 50, 100, and wishes to know the f/x ratio values. The stops are numbered according to Dallmeyer's decimal system, which starts with a unit of $\frac{1}{\sqrt{10}}$. To find the f/x values multiply these numbers by 10 and extract the square root; therefore, the above stops are $f/3{\cdot}6$, $f/10$, $f/12{\cdot}25$, $f/15{\cdot}8$, $f/22{\cdot}5$, $f/31{\cdot}6$.

T. E. D. CORNWELL.—The negative is slightly under-exposed and somewhat hard, this being accentuated by the developer you use. The consequence is that you have to over-print very much to get the detail out. Either you should expose longer or else weaken the hydroquinone developer by adding an equal quantity of water, when it will give softer results. You should try and rig up an artificial background, even if it is only a sheet of carpet paper, so as to cut out the bricks. You would probably find Lancaster's Multum-in-Parvo the one that would suit you.

MATABILE.—(1) Either Ashford's three-fold, or else the Thornton-Pickard automatic locking stand. A 6 in. head is quite large enough. (2) Can detail be equally obtained in platinotype by the cold-bath process as by the hot? Yes, we think the cold bath will give more detail than the hot. (3) The cheapest we can find is at 10s. 6d by Adams and Co., 81, Aldersgate Street, but it would be very easy to make a retouching desk, using a printing frame as a support. There is no book on the subject. (4) Please give a good working formula for Barnet plates. I have been using them for portraits with the usual quantity of pyro, 2 gr. to the ounce, but the faces are too dense. The very easy and simple method of reducing the pyro will obviate all this trouble if the maker's formulæ are adhered to, and the amount of pyro be reduced to half a grain per ounce, the other ingredients being kept normal. There will be no great density at first, and the harshness will be avoided. (5) Give printing processes for the best effects from (*a*) thin negatives, but full of detail, (*b*) black and white negatives with contrasts, (*c*) very dense negatives. Please give also the reasons for these defects. (*a*) For thin detailed negatives the best paper is either the gelatino-chloride or cold-bath platinotype; if very thin, then printing under green glass will improve matters; (*b*) for harsh contrasts, what we want to do is to select a paper which will reduce these, and we should choose a rapid bromide paper, give it a full exposure rather near the light, and develop carefully with metol or eikonogen; (*c*) very dense negatives will print well on almost all papers; the only thing is that they take a long time. We should choose a slow bromide, and give a good exposure to gaslight, and use ferrous oxalate. (*a*) Thin detailed negatives may be caused by stopping development before sufficient deposit is obtained, and also by over-exposure; (*b*) black and white or harsh negatives are usually obtained by under-exposure and using too much reducing agent, in this case pyro, in the developer. For amateur portraiture, metol or glycin are to be recommended, because there is less tendency for the high lights to get extra dense with these developers than with pyro; (*c*) very dense negatives are merely the fault of continuing the development too long, and when present this can be remedied by reducing the negatives slightly with hypo and ferridcyanide of potash; (*b*) this fault may be remedied by using McIntosh's rehalogenisation process, and (*a*) may be remedied by intensification.

G. N. PITT.—What is the action of the sulphocyanide in the Ilford toning bath, and does it require to be replaced? I find adding only chloride of gold to an old bath does not produce even toning, and adding an equivalent amount of sulphocyanide at the same time causes sulphur toning. The action of the sulphocyanide is to form sulphocyanide of gold, which deposits gold and takes up silver from the image. It is advisable to replace the sulphocyanide as well as the gold. We do not understand how it is that the addition of sulphocyanide causes sulphurisation, unless the bath be acid. It must be recognised that nearly all gelatino-chloride papers contain a certain amount of free organic acid, and this may cause trouble if not removed. Then again, commercial chloride of gold is frequently acid, one brand requiring as much as 7·5 gr. of bicarbonate of soda to neutralise the free acid in a 15 gr. tube. We think that the following procedure will give a good bath:—To the old bath add a good-sized lump of ordinary chalk, about the size of a walnut, shake up well, add the extra quantity of sulphocyanide. Neutralise the gold solution with a little chalk, add to the sulphocyanide solution, shake well, and allow to settle, and decant or else filter. We should prefer the former, leaving the chalk in the bottle and returning the bath to it after using, so as to neutralise any acid absorbed from the paper.

E. ROPNER asks where to obtain a lantern slide of Norway from 58 to 62 deg. lat., and at 4 to 8 deg. long, giving all the names of villages, glaciers, mountains, etc. The only thing we can suggest is to buy the best map that can be got from Stanford's, of Charing Cross, and copy it and make a lantern slide by contact. So far as we know, there is no slide map published.

MABEL has some very thin but clear lantern slides, and wants to intensify them without using so poisonous a chemical as mercury. Every intensifier is poisonous, but possibly the least objectionable is—

A.

Sulphate of copper	100 gr.
Water	2 oz.

B.

Potassium bromide	100 gr.
Water	2 oz.

Mix and immerse the plate in this then wash thoroughly, and blacken with ammonium sulph-hydrate, or a pleasanter smelling blackener is an old ferrous-oxalate, eikonogen, metol, or pyro developer. Or Eder and Toth's lead intensifier can be used—

Glacial acetic acid	10 drops.
Nitrate of lead	24 gr.
Potassium ferridcyanide	30 ,,
Distilled water	1 oz.

Bleach in this and blacken in ammonium sulphhydrate after washing, or a brown image may be obtained by using Schlippe's salt, sulphantimonite of soda, or the uranium intensifier may be used—

Uranium nitrate	5 gr.
Potassium ferridcyanide	5 ,,
Distilled water	1 oz.
Glacial acetic acid	10 drops.

In this the image becomes a rich red-brown. The plates should be thoroughly well washed first, and only washed for a very short time after, but according to our experience slides thus treated are not permanent. Probably the cause of their being so thin is due to your not carrying development far enough. Lancaster's Multum in Parvo, at 21s., is about the cheapest.

EXTRA SPECIAL.—We do not see the necessity of your getting B, as this would be of shorter focus than the half of your rectilinear. What might suit you would be one of Dallmeyer's negative attachments to your R.R. This would give you almost any magnification within reason that you require.

W. HEATH.—Many thanks for putting right. When we get hold of the slides we will number consecutively.

NIL DESPERANDUM, referring to an answer in our issue of November 3rd, re enlarging, is still in difficulties. We made a mistake. The Multum in Parvo has no lens; it is the combination. Our correspondent states that her camera will not rack out quite far enough. We should then fix the lens at one end of the Multum in Parvo, remove the sliding front of the camera, and pull the camera back to the required distance; in this case, practically, 9 in., and cover over the space between the lens and camera with focusing or other opaque cloth. Having once got your 12 by 10 covered, shift the negative backwards and forwards till it is sharp. Hints on cloud taking—Stop your lens down to $f/16$, give three turns to your Thornton-Pickard shutter, and use Ilford isochromatic medium plates; to develop use the ordinary Ilford pyro-soda developer with an equal quantity of water. Better results will also be obtained by using a pale yellow screen before or behind the lens.

GEO. H. WRIGHT.—Many thanks for letter, which we insert. (1) Good; the fence line is a little offensive (2) It is a pity that you did not cut off some of the top and put it on to the bottom. We should now trim down to the top of the wall. (3) Under-exposed and over-printed. (4) Ditto. (5) Ditto. (6) Good; 3, 4, and 5 are so bad that we can hardly understand it in the face of No. 1, which is very good indeed.

F. J. TOLLIE.—Thanks for your hint. It has been forwarded to a quarter where it will be acted upon

COMBINED BATH has been using Mr. Fry's combined bath for toning chloride paper, and is pleased with the tones, but is now told that the mixture is very deleterious to the prints. Is this so? Would it be advisable to reduce lead acetate to ½. It has been used ½ strength, and it works almost as well. Mr. Fry's formula is—

Hypo	1 lb.
Lead acetate	1 oz.
Chalk	1 ,,
Water, to	80 ,,

To every 5 oz. add 1 gr. of chloride of gold. We took exception the first time we heard of this bath, for on adding chalk or calcium carbonate to acetate of lead, carbonate of lead would be precipitated and acetate of calcium formed according to the equation—

$$Pb2(C_2H_3O_2),\ 3H_2O + CaCO_3 = Ca2(C_2H_3O_2) + PbCO_3 + 3H_2O,$$

and from this it is evident that 10 gr. of chalk would precipitate 38 gr. of lead acetate. But as the lead is added to the hyposulphite, lead hyposulphite is formed, and probably lead carbonate would not be precipitated. Hyposulphite of lead is soluble in excess of hypo with the formation of the double salt $PbS_2O_3,\ 2Na_2S_2O_3$; hyposulphite of lead is slowly decomposed and lead sulphide is precipitated:

$$PbS_2O_3 + H_2O = PbS + H_2SO_4.$$

The sulphide of lead is immediately decomposed into sulphide of silver if silver be present, and it would be in a combined bath that had been used. But Mr. Fry using such a large excess of chalk, any sulphuric acid set free would be neutralised, and thus prevent the setting free of sulphurous acid, which takes place according to the equation—

(i.) $PbS_2O_3 + H_2SO_3 = PbSO_3 + H_2S_2O_3$.

(ii.) $H_2S_2O_3 = H_2O + S + SO_2$.

Therefore it would seem that the only possible effect of the addition of lead to the above bath is to precipitate the silver as sulphide. We commenced to experiment with this bath, and made up half a gallon last week. It certainly tones well and readily, but the stock solution without gold has now a heavy dense black precipitate at the bottom, and pouring off some of the clear solution we find that without the addition of gold it tones almost as well. Mr. Fry will, no doubt, favour us with his views on our arguments, which, we must confess, are based purely on theoretical lines, for we have not had time to carry out any accurate experiments. Up to the present Valenta's bath is the best, we think.

Water	1 oz.
Hypo	200 gr.
Ammonium sulphocyanide	25 ,,
Nitrate of lead	10 ,,
Alum	20 ,,

Dissolve the hypo, add the sulphocyanide then the alum, and finally the lead dissolved in a little water; heat to 50 deg. C. for ten minutes, filter, and add 7 to 8 parts of a 1 per cent. solution of chloride of gold to every 100 parts of above. The alum may, of course, be omitted from the above if thought desirable.

W. J. W. has been photographing *Black and White* drawings, using ordinary plates, 15 in., magnesium wire [? ribbon, Editor], and developed with ferrous-oxalate till all the surface was black, and the results are not satisfactory. Quite so, nor should we expect them to be. In the first place, ferrous-oxalate is absolutely useless, then ordinary plates are too rapid—too soft working. Use Mawson's or England's photo-mechanical plates, or else any ordinary slow-lantern emulsion plate. The best developer is either pyro or hydroquinone—

Metabisulphite of potash	2 oz.
Bromide of potash	½ ,,
Water	8 ,,

Dissolve, and add—

Pyro	1 oz.

For the developer take—

(1) Above stock solution	2 oz.
Water	18 ,,

and (2) saturated solution of washing soda. Mix in the proportion of 8 of No. 1 to 1 of No. 2. Or you can use hydroquinone if you like, but we prefer pyro—

No. 1.

Hydroquinone	80 gr.
Metabisulphite of potash	120 ,,
Bromide of potash	5 ,,
Water	20 oz.

No. 2.

Caustic potash	200 gr.
Water	20 oz.

Mix in equal parts. The first essential in copying line work is absolutely clear glass; density is a secondary consideration in development, though if the exposure is correct both may be readily obtained. When the slightest sign of veiling over in the lines appears, wash and fix. If not dense enough, then resource must be had to intensification.

THE AMATEUR PHOTOGRAPHER

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received on or before the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

The *Cosmopolitan* for November well maintains the high standard for which this magazine has become noted, and the reduction in price to sixpence per month seems to have led to even better work in the shape of articles and illustrations.

The first article is by the well-known German portrait painter, Franz von Lenbach, which is not only interesting from a general point of view, but also from one pithy passage, which is worth recording. After speaking of the necessity of the painter studying his sitter, and "ferreting out the original personality," Von Lenbach says, "Believing in what I preach, my sitters escape the torment of posing for any great length of time; I put no faith in it; it is not my method. We approach each other on a social footing of great friendliness, and it is in the nearer acquaintance thus made that I endeavour to draw out some special trait which shall stamp my portrait. To shorten the mere study of the human form, I utilise the camera. It may very justly be observed, however, that photography is only to be recommended to artists who can emancipate themselves readily, when necessary, from this purely mechanical aid, and who do not permit their æsthetic taste to be destroyed by the hardening realism of actualities."

This number of the *Cosmopolitan* is also interesting, because an article, entitled "Measures of Lawn," is illustrated by reproductions in colours, which are produced, we believe, by three process blocks, we should say by the Kurz-Vogel process. These are not perfect by any means, but they are an indication that such processes can be used for illustrating articles by interspersing such illustrations in the text.

It is stated that a well-known firm of English colour printers are at the present time engaged in a series of experiments with Mr. F. E. Ives, of Philadelphia, to try and produce some such results, whilst we know personally of two or three other experimentalists who are working on the same lines.

Should success be attained, it is not too much to state that it will be a serious blow to chromolithography, and would lead to a great saving both of time and labour, if, without the intervention of hand work in any way, we could produce in a few hours the same effect which now takes a litho artist three or four days to attain. We shall have something more to say on this subject presently, and hope to be able to present our readers with a specimen of work thus produced.

DR. W. H. VOGEL, in his "Letter from Germany" to *Anthony's Bulletin*, gives a brief review of the World's Fair photographic exhibits, and says :—

"Regarding England's accomplishments in portraiture the opinion heretofore has not been very high in Continental Europe, and the average pictures, particularly of the London artists, may not be the very best, but in landscapes and scenery it deserves high credit, and is, perhaps, our superior. The English division of the Chicago Exhibition, however, shows such magnificent work in portraiture that they rank among the first of the exhibitors, and will rectify all previous opinions."

WE also commence this week an article by an old contributor, Mr. John Fretwell, in which he gives his views of the photographic exhibits, with some rather caustic remarks upon the increased tariff which has to be paid on goods in America.

IN our note on Messrs. Morgan and Kidd's exhibit at the Stanley Show, we unconsciously pay their collotype printing a very high but not undeserved compliment. For we stated that they were showing bromide and carbon enlargements, whereas we mistook some very fine collotypes for carbon work. Collotype printing has now reached such perfection that in the rather dim light in which we saw the said enlargements we mistook them for carbon.

IT is not often that a daily paper uses half-tone process, but we have received from an old competitor and prize winner, Mr. John E. Dumont, of Rochester, U.S.A., a copy of the Troy, N.Y., *Daily Times*, which has issued a special supplement containing illustrations by means of half-tone process blocks of the prints sent in to their photographic competition. As is usual with nearly all American magazines and papers, the printing is perfection, and makes us long to be able to turn out the same quality of work in our paper.

THERE is one sentence at the head of the above paper which struck us rather, and that was, "In preparing the photographs for reproduction it was necessary to reduce the size of some, thereby lessening their beauty, etc." We have before now frequently met with the same opinion amongst our competitors; they seem to think, too many of them, that size has everything to do with the beauty of the picture, and that the bigger the print the more beautiful it must be.

WE were always under the impression that size had nothing to do with the artistic merit of a picture, except that when a man is able to turn out first-class work he generally goes in for a larger size camera. Certainly we think in our competitions the smaller prints are more successful than the large ones.

WE publish elsewhere a letter from "Penfeather" upon the question of reducing railway rates to photographers. We do not in any way wish to burke the discussion on this point, but we may state that we believe it is an utterly hopeless task. We ourselves saw last summer a prominent official connected with a southern line, who spoke most emphatically and decisively in the negative on this point, and we have this week also seen a gentleman who is connected with nearly every leading line in England, who, himself an amateur, speaks most pessimistically on this point, but offers to introduce any deputation to the leading officials.

THE affiliated societies have, we believe, appointed a committee on this subject. We should like to see their report, which we believe is ready. It does not seem generally known that any party often travelling together can obtain a reduction which will allow them to travel both ways for a fare and a quarter, and a party of thirty can travel both ways for a single fare.

OUR readers will see by an announcement on another page that Mr. H. Snowden Ward, who has for so long successfully edited *The Practical Photographer*, has severed his connection with Messrs. Percy Lund and Co. This does not, however, mean that he will no longer contribute to photographic and general journals.

Flotsam and Jetsam.

No intelligent amateur, or, for that matter, no intelligent reader of the daily press, can now be ignorant as to the enormous range and variety of the powers of the camera. It can take almost anything on the earth, above the earth, or in the waters under the earth.

IT captures the lightning, and takes the raging sea at the height of its fury. It brings to our ken numberless stars far off in space, that had eluded human vision even when aided by the telescope, but could not escape the photographic eyes of science. It has even caught and fixed the likeness of a bullet whistling through the air with almost incredible velocity.

AND now it is to be used to photograph an earthquake, or, at least, the exact instant at which a shock of earthquake, such as we have lately experienced even in this solid England of ours, occurs. An instrument has been devised in Italy which acts in this way : the shock sets up an electric current, which immediately lights an incandescent lamp.

THE lamp illuminates the face of a chronometer, which is exposed to a camera forming part of the instrument. This instrument must, of course, have a name. They call it the seismograph. It is only necessary now to devise some means of photographing the earthquake itself

ACCORDING to a contemporary, a member of the Vienna Amateur Photographic Club has discovered, and presumably practises, an ingenious plan of securing cloud negatives. He is not content with what nature has given him, or not patient enough to take his negatives from her.

So he covers a drawing board with white paper, fixes pins in the paper at intervals, and covers it with wadding drawn out to hang in flakes on to the pins. The light thrown from a brilliant lamp into this arrangement is said to give the effect of natural clouds.

ISN'T this importing into photography something of that trickery, excused under the plea of "imaginative work," to which too many followers of Art, with a capital A, descend? One of the greatest merits of the camera is that "its witness is true" and its work is real. A photographic landscape is a landscape that actually exists, and herein lie some of its strongest claims to consideration.

IF the Viennese amateur be followed, this advantage will be given away, and nothing will be gained in exchange. But there is little fear of this. Artistic photography will pursue its path of progress by legitimate means, going straight to nature for inspiration and copying her with all humility and faithfulness.

IN this way it has already produced magnificent work, *e.g.*, that shown at the Salon, and that exhibited by individual workers, such as M. Paul Lange, whose evening at the Central Club last Friday was a great success. If the other lectures are anything like this there will be a run on them.

ANCHORITE.

Letters to the Editor.

STOP THIEF!

SIR,—On Thursday, November 16th, our retail premises in Harrison Street, Leeds, were entered by thieves and a quantity of goods stolen. They were entered by cutting out a window, which they did very neatly, and removing every particle of glass. After getting in they seem to have taken things very business-like, wrapping and tying the cameras and slides in parcels of brown paper. For some reason two of the cameras were left, although nicely packed up ready for taking away. The barefaced part of the business is that all the cameras were taken out of the window facing the street, which has neither shutters nor blinds. Several packets of plates were opened and thrown about the shop. One would think that photographic goods would be bad to dispose of. We enclose a list of goods which have been taken, and thought you might insert them in your next issue. It might be the means of bringing something to light, and at least it will be a warning to other dealers, that even photographic goods, cameras, etc., are not despised by burglars.

Lenses.—Half-plate aluminium R.R., iris diap., French; half-plate conical mounted view; whole-plate ditto; two half-plate W.A. R.R., French; whole-plate W.A. R.R. panoramic, French; half-plate R.R., Waterhouse (named Watkinson and Co., Leeds); half-plate view, T., T., and H., Waterhouse; two half-plate R.R., Black Band, Waterhouse, French; three quarter-plate periscopic, Black Band; two half-plate periscopic, Black Band, French; half-plate single view, large mount; 18 × 16 Wray R.R.

Two nickel-plated rose taps, and tubes of chloride of gold; one circular level; three view-finders; two T., T., and H.'s view finders, camera obscura pattern.

Cameras.—Whole plate, conical bellows, double panelled base-board, brass uprights to front, and one slide; half-plate, ditto, with turn table; half-plate light camera, with three double slides, 3-16ths register; quarter-plate studio, with repeating back; quarter-plate, conical bellows, and one slide; half-plate, second-band, and one slide.—Yours, etc., WATKINSON AND CO.

Leeds, Nov. 21st, 1893.

* * * *

EAST LONDON PHOTOGRAPHIC SOCIETY.

SIR,—The Exhibition Committee of the above have decided to return the entrance fees paid for the Open Class E, in their recent exhibition, as the judges made no award.

If those who competed will send stamped directed envelope to me, I shall be happy to refund P.O. by return.—Yours faithfully,

WALTER R. GOULD (Hon. Sec.)

61, Gibraltar Walk, Bethnal Green, Nov. 24th, 1893.

* * * *

RAILWAY CONCESSIONS FOR AMATEUR PHOTOGRAPHERS.

SIR,—I am sorry that your correspondent, Mr. Henry G. Wright, did not honour me by reading my "splash" on the subject of reduced railway fares to photographers" with a little more care. Had he done so, the letter which you print in your last issue, in which he criticises it, would, probably, have remained unwritten, and I should have been spared the necessity of occupying space in your columns in an attempt to remove the wrong impression which his remarks are likely to create.

In my opening paragraph I stated that the committee of the affiliated societies had been considering the best means of approaching the railway companies with a view to obtaining a reduction of fares to photographers, and had come to the conclusion that they were unable to recommend any course which would hold out a reasonable chance of success. As the affiliation of photographic societies includes something like fifty of the leading societies in the kingdom, with the Photographic Society of Great Britain at their head, we may reasonably assume that the interests of photographers, even in a matter as important as that now under discussion, are safe in their hands, and that a pronouncement of so discouraging a nature as that referred to would not have been made without careful consideration of the facts of the case, nor without enquiry having been made into a matter so obviously bearing on the subject as the privileges accorded to anglers. Perhaps your correspondent will allow that, as the subject has already been dealt with by this undoubtedly representative body, his suggestion as to the course photographic societies ought to take can hardly be considered as a novel one.

With regard to the concession which the railway companies make to anglers, it may be gathered from your correspondent's remarks that he labours under the common but erroneous impression that a member of an angling society has only to present his card of membership at the booking office of any railway station and to show his fishing tackle, to entitle him to the issue of a ticket at a reduced fare to whatever station he chooses as his destination. I have the authority of the hon. secretary of one of the leading angling clubs for saying that the privileges which anglers enjoy are much more limited in character. Some of the railway companies issue anglers tickets, but in all but few cases they are issued only from the terminal station of the line, and only to well-known anglers' resorts; so that to place the photographer on the same footing as the angler, which your correspondent seems to think is the definite object to contend for, would, after all, prove of limited value to photographers in general. Some few—those who actually reside in, or very near, London—would gain, but those outside the metropolitan area would be in no better position than at present. I need not controvert in detail the several arguments Mr. Wright brings forward in support of his case, since they are founded on a misapprehension of facts, but there is one point upon which I must bring him to book. He says: "The remarks as to such concessions being an opening for the general public to demand similar treatment are uncalled for, seeing that the arrangement I have alluded to has existed for many years," etc. Now, the only reference I made to the general public was with regard to a resolution to petition the railway companies to allow a journey to be broken at intermediate stations, a matter quite outside anything Mr. Wright has referred to in his letter, and in applying my words on one subject to an entirely different one he shows reprehensible carelessness. I give him every credit for a laudable intention to promote a very desirable object, but his methods are more likely to hinder than to advance matters. There are two sides to the question, and two interests involved. We have to prove that these two interests are not in opposition. It is of no use lecturing railway managers on railway management, especially if the best arguments which can be presented are based on such a nebulous hypothesis as the supposed anglers' concession. Before we can approach them with any prospect of success we must be ready to suggest a way out of every difficulty that is likely to be raised. Let your correspondent take his penultimate paragraph and consider the possibilities for fraud it suggests. If membership of a photographic society is to constitute a claim to travel at a cheaper rate than the ordinary fare, what is there to prevent any person who is not a photographer from becoming a sham one for the express purpose of defrauding the railways by using the privilege granted him as a photographer for the purposes of his ordinary business? Admission can be easily obtained to most photographic societies without any question being asked as to the candidate's connection with photography, and a half-guinea hand-camera is quite as much a complete photographic apparatus as the most elaborate and bulky set. Again, is the proposed privilege to be confined to amateurs? If so, the oft-disputed question arises, what constitutes an amateur? If not, why is a professional photographer to be treated better than any other individual travelling upon business affairs?

In conclusion, I must express regret that in a communication dealing with a matter so closely connected with the interests of photography, a distinction should be made in favour of the amateur photographer. It is now generally recognised that no clear line of division can be drawn between the amateur and the professional. If it could be, it is the amateur class that would suffer. An investigation would probably show that THE AMATEUR PHOTOGRAPHER, in spite of its title, is as much appreciated by the professional as by the other class, for which it was originally intended.—Yours, etc. PENFEATHER.

The Benevolent.—Meeting of committee at the rooms of the P.S.G.B., 5A, Pall Mall East, on November 15th, Mr. A. Mackie in the chair. First application was one that had been received by one of the subscribers, and handed over to the Benevolent by him. As the applicant had made two previous appeals to the Association, and both times been refused as unsuitable for assistance, the Secretary was instructed that nothing could be done. The second application was from a retoucher who had been disabled for many months by street accident, and whose case was partly considered October 30th. Secretary had already advanced, under instructions, £2. Applicant now asked for 35s., to pay off his debts, and sufficient money to live upon for five weeks, at the end of which time he would receive money from his friends to enable him to go out to South Africa. A loan of 35s. immediately and 17s. 6d. for five weeks was granted. The third application—a collier out of work through the coal strike—asked for means to obtain a whole-plate camera, as he was an amateur, and could obtain enough work to keep him from starvation if he was able to photograph whole-plate groups. The Secretary was instructed that as there was so much want amongst photographers, the Association could not assist amateurs to enter the ranks. Messrs. Chas. Faulkner, and Arthur Priestly, and Miss Edith M. Hardy were accepted as members. Donations were acknowledged with thanks, from Sandell Exhibition, £9 14s. 3d.; Photographic Society of Great Britain, first instalment of benefit, £3 10s. 1d.; Hackney Society, collection, £1 13s. 6d.; Central Club, collection, £1; *Photography* Prize Competitions, balance, 18s. The Secretary reported that two applicants, to whom loans had been made, had commenced to repay them by small instalments.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER VIII.—*Continued.*

(12) *Pyrogallol.* Burton Jones added 1-300th of its weight of pyrogallol to the emulsion, in order to increase its sensitiveness,[1] which, however, W. H. Vogel declares to be useless for ordinary gelatine emulsion,[2] whilst collodio-gelatine becomes thereby almost double as sensitive.[3] Dr. Stolze's communication in the *Photographischen Wochenblatt*, 1885, pp. 318 and 327, is worth noting, according to this pyrogallol and sodium sulphite can be added to bromide emulsion. The plates can then be dried and exposed as usual, and they will then develop in plain solution of carbonate of soda. It would, therefore, be possible for the maker to mix the emulsion whilst preparing the same with the necessary quantity of pyrogallol, which would be a great saving and convenience for tourist photographers. Moreover, according to Meydenbauer, the sensitiveness of the plates should be increased by this addition (*loc. cit.*, 1886, p. 74). The keeping power of such emulsions has not been determined, as a trial of only six weeks' duration has been made. (Eder's "Jahrbuch," 1887, p. 304.)

(13) *Gallic acid*, which acts so advantageously in the dry-collodion process, does not increase the intensity of gelatine emulsion, and, according to Davies,[4] offers no advantage.

(14) *Tannin*[5] has been proposed as an addition to harden the gelatine, and thus prevent frilling of the film. It ought not, however, to be used.

If the above substances are added to the emulsion, it must not have an alkaline reaction, otherwise fog will be formed.

(15) *Hydroquinone* has been recommended as an addition to bromide emulsion plates, and Biering, of Odessa, introduced, commercially, plates thus prepared (*Photo. Archiv.*, 1886, p. 230). In fact, hydroquinone, with the addition of sulphite of soda, does not appear to injure the keeping power of such plates, since, according to Biering's experiments, such plates keep over a year. (*Photo. Archiv.*, 1888, p. 121).

(16) *Acids.* Mineral acids act not only during the preparation of the emulsion as restrainers, but still more in the washed emulsion. For instance, hydrochloric acid lowers the sensitiveness very much if it is added to the emulsion before coating. Acetic acid lessens to an equal degree the vigour and sensitiveness, but not to an equal extent in all emulsions. It acts very unfavourably on melted ammonio-nitrate emulsion,[6] but is not very injurious to acid emulsions prepared by boiling.

Stolze[7] tested the action of acid and alkalies on the emulsion, and found that acidulation of the gelatine emulsion considerably lowered the sensitiveness, though its photo-chemical properties were not affected. The action of light took place as with an alkaline emulsion, though the sensitiveness was not so great, probably because when the emulsion was acid the gelatine alone acted as a sensitiser, whilst in an alkaline emulsion the alkali acted as a sensitiser as well. It was sufficient to neutralise before exposure the trace of acid and leave the film alkaline in order to increase the sensitiveness.

(17) *Bromine.* Free bromine is absorbed by gelatine: in large quantities it lowers the sensitiveness of the emulsion, makes it clearer, and destroys any existing fog, of which Dr. Eder has already remarked in an earlier edition of this work. Bromine vapour acts only very slowly on dry plates. Bromine water acts very much more favourably, that is to say, water which is saturated with bromine; when saturated it has dissolved about one-thirtieth of its weight. Bromine water is an excellent addition to the prepared emulsion, to destroy fog. According to the *Photographic News*,[8] ½ to 2 c cm. of bromine water to 500 c.cm of emulsion destroys the fog completely. Dr. Eder found, however, that this quantity is too great, and that frequently even 1 drop of bromine water to 100 c.cm. of emulsion is sufficient. Bromine water acts best in the washed melted emulsion. Ammonia ought not to be present, because the ammonia and the bromine are immediately mutually decomposed.[9] Dr. Eder found the following *modus operandi* the best: Melt the washed emulsion, add to every 100 c.cm. of emulsion 2 to 3 c.cm. of alcohol, well stir, and carefully add, with constant agitation, for strong fog 8 to 10 drops of bromine water, for faint fog only 1 drop. Cover the vessel with a sheet of glass and allow the emulsion to stand for quarter of an hour in the warm, so that the bromine can act. It combines tolerably quickly with the silver sub-bromide, and converts it into normal bromide of silver. The excess of bromine does not combine with the gelatine, but forms with the alcohol various products, amongst which odorous kinds of ether are found; after a quarter of an hour the pungent unpleasant smell of bromine is converted into a pleasant smell of ethereal fruit essence. The plates may then be coated with the emulsion and clean-working durable plates obtained. The sensitiveness does not sink by the addition of bromine, unless one has added too much. Such emulsions, however, always give very beautiful details.

The smell of bromine disappears in a few minutes by standing in gelatine emulsion in the heat. The bromide partly volatilises, and partly forms, with the gelatine and other organic substances, bromised products and hydrobromic acid. If bromine remains combined with the gelatine in the emulsion it destroys the sensitiveness. Bromine acts most favourably on gelatino-bromide of silver in the presence of alcohol. It destroys the fog of the bromide of silver and combines with the alcohol, by which it is converted into harmless products. In the presence of alcohol one can use more bromine water without harm than without this admixture. The addition of "bromine alcohol" acts less radically, yet also as a destroyer of fog. This was recommended by Roux,[10] and is prepared by mixing 1 part of bromine with 200 parts of alcohol. About 2½ c.cm. of the same should be mixed with every 100 c.cm. of the boiled emulsion, and then the whole kept warm for a quarter of an hour, and then washed.

(18) *Tincture of iodine.* This causes the emulsion to give vigorous images; it becomes, however, much more in-

[1] *Photo. Mitth.*, 1880, vol. 16, p. 280.

[2] *Photo. Mitth.*, 1880, vol. 16, p. 280.

[3] *Photo. Mitth.*, 1882, vol. 18, p. 303.

[4] *Photo. News*, 1884, p. 350.

[5] Jarman dissolves 1 part of tannin in 10 parts of alcohol, and adds 2 to 2½ cc.m. of this solution to 600 c.cm. of emulsion.—*Year Book of Photography*, 1882, p. 137.

[6] Manufacturers should expose the set unwashed ammonio-nitrate emulsion to the process of acetic acid before they wash the same.

[7] *Photo. Wochenblatt*, 1889, p. 233.

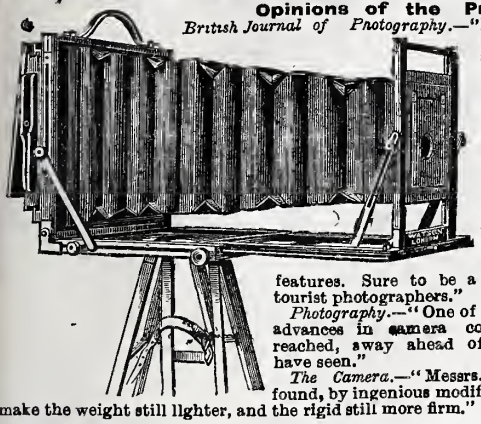
[8] *Photo. News*, 1884, p. 225.

[9] Ammonia and bromine form bromide of ammonia with evolution of nitrogen.

[10] Roux, "Manuel Opératoire pour l'Emploi du Procédé au Gelatino-Bromure d'Argent," 1880, p. 7. The mixture is prepared twenty-four hours before use, and will keep indefinitely.

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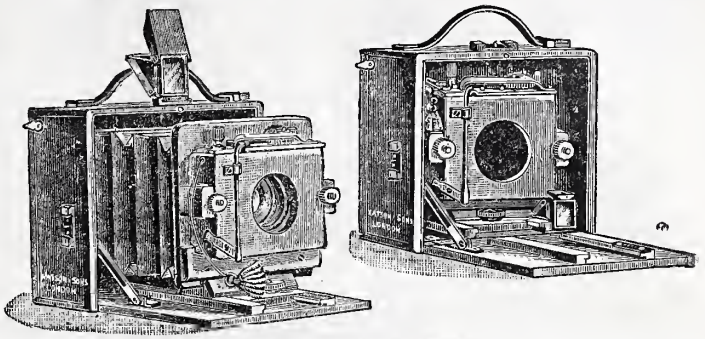
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Exposure Shutter...	1	0	0	1	0	0	1	0	0	Exposure Shutter...	1	0	0	1	0	0	1	0	0
Finder	0	10	6	0	10	6	0	10	6	Finder	0	10	6	0	10	6	0	10	6
Travelling Case ...	0	12	0	0	15	0	1	0	0	Travelling Case ...	0	7	6	0	9	6	0	12	6
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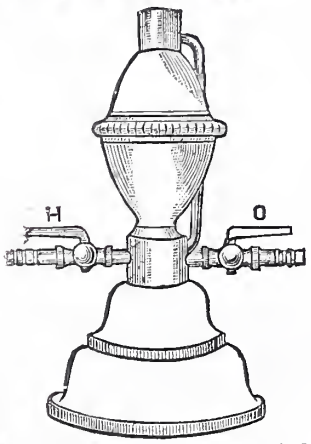
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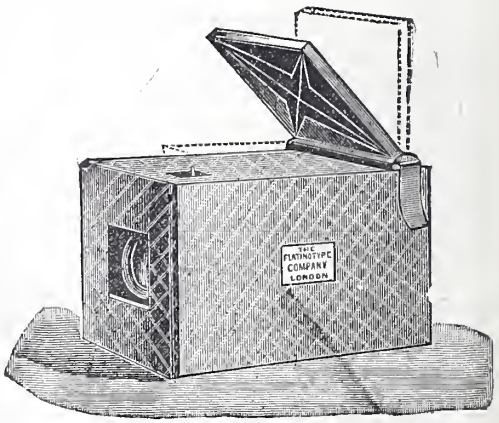
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sensitive, *e.g.*, by eight drops of solution to one litre of emulsion.[1] According to Arnold Spiller, iodine destroys the latent image, and plates treated with iodine easily give by exposure in the camera reserved (position) images.[2] Dr. Eder found iodine tincture not so effectual for the destruction of fog as bromine tincture, and never uses the former.

(19) *Bichromate of potash.* If a prepared washed bromide emulsion is mixed with oxidising substances such as bichromate of potash, and exposed without washing out the same, the sensitiveness sinks considerably (Abney). If the bichromate is washed out, sometimes a loss of sensitiveness is to be noticed. Frequently not, however.[3] Bichromate of potash destroys a weak action of light and a weak fog. A foggy emulsion can, indeed, be restored according to Abney's suggestion, by pressing it through a coarse web canvas into a solution of about half to two per cent. of bichromate of potash, allowing it to remain from two to five hours in the same, and washing for an hour or longer with water, to remove the adhering chromate. If the latter is not well washed out, the sensitiveness sinks to about one-third. By the addition of one to three per cent. of bichromate to the emulsion one can destroy the fog induced by too long boiling. The fog is, however, only thoroughly destroyed if alum be present; ammonia prevents the action. If foggy gelatine plates are dipped in a two per cent. solution of bichromate of potash, the fog becomes less, but the plates, even if they are very well washed, become less sensitive; clean-working plates, thus treated, lose in an equal degree some of their sensitiveness. Strongly fogged plates are not completely freed from fog.[4] A solution of bichromate acidified with mineral acids acts much more energetically as a fog destroyer than a pure solution. Hydrochloric acid acts most favourably, a fact which was published by Dr. Eder in 1881, namely, 1 bichromate of potash, 3 hydrochloric acid, and 150 water.[5]

(20) *Iodide of potassium* in the prepared emulsion causes thinness of the image. On exposed plates it destroys the latent image almost entirely.

(21) *Cyanide of potassium* produces great clearness in the emulsion; retards, however, the formation of the image, if it exists even in small traces in excess.

(22) *Metallic perchlorides*, such as ferric and cupric chlorides, are prejudicial to the sensitiveness, if they are added to the emulsion during the preparation, and are contained in the same during the exposure. According to Cowan,[6] bathing the jelly in a solution of cupric chloride, 1:480, should destroy green fog after a few minutes.

(23) *Ferric oxalate.* If one bathes gelatine emulsion before exposure in a solution of ferric oxalate, the sensitiveness is lowered.

(24) *Sodium sulphite.* See p. 343.

(25) *Uranium nitrate*, recommended by Wortley[7] as an addition to prepared gelatine emulsion, is without any striking action, except that it acts somewhat as a preventive of fog. In the liquid emulsion it causes coagulation of the jelly. (Eder.)

(26) *Nitrite of potash*, in the prepared emulsion acts, according to Abney,[8] against solarisation.

(27) *Arseniate of soda* Maddox used in his first emulsion, which was not digested with heat. It should make the colour of the negative darker.

(28) *Red prussiate of potash* acts very similarly to cupric chloride. It should be used only with caution in the liquid emulsion because it makes the gelatine in time insoluble.

(29) *Antiseptics.* The keeping power of the jelly may be increased by certain additions which act antiseptically, *e.g.*, by alum, carbolic acid, thymol, resorcin, glycerin, etc. These additions to the emulsion, however, only serve a purpose if the emulsion, after washing, is melted and allowed to set, and if one wishes to keep it in the form of a jelly, or introduces it into the market, neither of which cases frequently happens.

On the action of these additions many observations have appeared. Dr. Székely found that in the course of the summer all emulsions prepared with thymol or salicylic acid became liquid. Captain Toth and Dr. Eder observed that emulsion mixed with thymol or salicylic acid kept much longer than those without this addition. Whilst the latter, in the height of summer, became liquid within three days in a warm place, the former kept from six to eight weeks—indeed, the gelatine emulsion, in spite of the prevailing high temperature of the air, can be kept—because of the antiseptic—with safety for a few weeks at least. Haack finds the efficacy of thymol still more favourable, extending, indeed, over some months. Dr. Heid observed also that gelatine emulsion mixed with thymol or carbolic acid remained unaltered in summer for three months. On the other hand, the emulsion mixed with salicylic acid had become liquid. From which will be perceived the weaker action of salicylic acid in comparison with the other two substances. This agrees with Dr. Fleck's statement, according to which benzoic and carbolic acid act in a higher degree as antiseptics than salicylic acid; Müller found also that salicylic acid could not always replace carbolic acid for practical work. Finally it should be remarked that carbolic acid generally prevents putrefaction in the strongest degree, and that it is superior to thymol in this respect, the use of which is also lessened because it shows a less powerful action at a higher price.[1] The said antiseptics should be added to the emulsion as follows:—To every 100 c.cm. of liquid washed emulsion should be added 2 g. of carbolic acid or thymol dissolved in 5 c.cm. of alcohol and intimately mixed.

Burton[2] removes "surface fog," which can frequently be wiped off with the finger, by adding 10 per cent. of an alcoholic solution of salicylic acid (1·50), the addition being made after the digestion is ended and immediately before pouring out to set. Added before the ripening, it would make the same slow. Benzoic acid added to the emulsion in alcoholic solution gives, according to Henderson,[3] clean and dense images. Lagrange recommended the addition of hydrochlorate of quinine, namely, about ten drops of an alcoholic solution to 100 c.cm. of emulsion, which he found more efficacious than carbolic acid.[4] Resorcin, the use of which in this direction Toth and Eder,[5] and later Warnerke,[6] noticed, is a powerful antiseptic. Mercuric chloride is a powerful antiseptic, but it hurts the photographic qualities of the emulsion.[7] Most manufacturers prefer to prepare the emulsion without the addition of an antiseptic, and to use it up quickly.

[1] Scolik, *Photo. Corresp.*, 1882, p. 276.
[2] *Photo. News*, 1884, p. 236.
[3] Eder and Pizzighelli, *Photo. Corresp.*, 1880.
[4] Eder and Pizzighelli, *Photo. Corresp.*, 1881.
[5] *Photo. Archiv.*, 1881, p. 109.
[6] *Photo. Corresp.*, 1882, p. 46.
[7] *Photo. Archiv.*, 1876, p. 121.
[8] *Photo. Mitth.*, 1879, vol. 15, p. 304.

[1] *Photo. Corresp.*, 1880, p. 224.
[2] *Brit. Journ. Phot.*, 1882, p. 730.
[3] *Photo. News*, 1883, p. 324.
[4] *Photo. Wochenbl.*, 1881, p. 213.
[5] *Photo. Corresp.*, 1880, p. 193.
[6] *Jour. of Phot. Soc.*, 1881, p. 71. *Brit. Journ. Photo. Alm.*, 1882, p. 209.
[7] Henderson, *Photo. Corresp.*, 1885, p. 178.

Wet Collodion for Beginners.

(*Continued from p.* 317.)

BY CHARLES W. GAMBLE.

IV.

HAVING described the preparation of the "bath," we now come to the arrangement to be used for holding the same during the sensitising of the plates.

The solution may be held in either a vertical bath, called a "dipping" bath, or in a flat glass or porcelain dish. The vertical bath is the form which has been and is very largely used, and many operators have a marked preference for it over the other form. Those, however, who nse the flat dish strongly recommend it, holding that it possesses advantages over the vertical form. If the flat dish is nsed, less solution will be reqnired, and the "bath" is more readily poured away into the bottle when done with. For a given bnlk of bath there is also a larger surface exposed, and this allows the evaporation of the ether and alcohol with which the solution becomes charged from the collodion films. This is a decided advantage, but it must be remembered that there is a certain drawback when a large surface of the solution is exposed, in that the bath is more easily contaminated with dust from the air of the apartment where the plates are sensitised. For this reason the dish should always be kept covered as much as possible, and when the "bath" is done with it shonld be poured away into the bottle. Many large commercial establishments nse the flat dish and find it answers the best. The writer prefers it, and recommends the stndent to adopt it.

In the list of articles that are required for working the process, No. II., page 281, there is mentioned a "$8\frac{1}{2}$ by $6\frac{1}{2}$ new deep porcelain (or preferably granitine) dish on stand, with cover." This is to be used for holding the "bath." A more detailed description of the arrangement will now be given, which, with the aid of the illustrations, shonld be quite plain. First with regard to the dish. A *new* dish —one that has not been used—is reqnired, this being important. The student is warned against taking a dish that he has had in nse for other purposes. Granitine is recommended, as the glaze is harder and the dish will stand better. The size given, $8\frac{1}{2}$ by $6\frac{1}{2}$, may be used for plates up to half-plate, though it is somewhat small for this size. The stand consists of a piece of wood 13 by 11 (a small

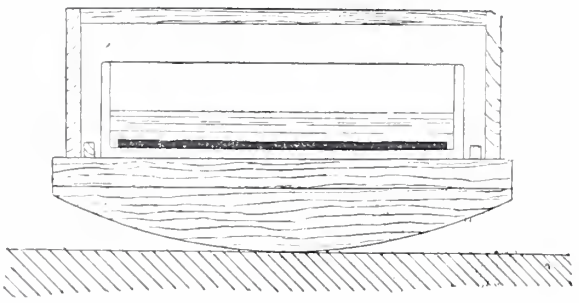


FIG. 3.

drawing board answers well), by 1 in. thick. Underneath the board are fixed two pieces of curved wood, one at each side (13 in.). These strips are $1\frac{1}{4}$ in the centre, tapering off to $\frac{1}{2}$ in. at each end, and are 2 in. broad. They are fixed with their flat surfaces to the board. These are for rockers. The dish is placed on the top in the centre of the board, and ronnd it are fixed four strips of wood 1 in. high and $\frac{1}{2}$ in. broad. A wooden cover is now made to fit over the dish, coming outside these strips, fitting loosely. The cover inside should be 1 in. higher than the top of the dish. The whole of the woodwork is given two coats of Bates' black varnish. Figures 3 and 4 show the arrangement when completed. Fig. 3 is a section cut through the length; fig. 4 a perspective view, with a portion of the cover and end of dish removed.

For lifting the sensitised plate out of the solution a hook of pure silver fitted into a wooden handle is to be nsed. The whole should be varnished with a conple of coats of shellac varnish. The vulcanite hooks, the writer again desires to say, are not to be recommended. Fig. 5 shows the form of the hook.

Collodion.—The student is not recommended to prepare his own collodion at the ontset, thongh he is advised to do so when he has obtained a fair knowledge of the manipulations of wet-plate photography. Indeed, it is necessary that he should do so if he wishes to obtain a thorough knowledge of the process. For the present he should obtain from one of the well-known and reliable makers a small qnantity of bromo-iodised collodion, say 10 oz. The collodion is snpplied either containing the iodides and bromides and free iodine, or with these in a separate solution—"iodized collodion" or collodion with "iodizer separate." In the latter case, half the amonnt of alcohol is left out of the collodion, and this is used as a solvent for the iodides, bromides, and free iodine. To iodize the collodion, take—

Collodion	...	...	...	...	...	...	3 oz. fl.
Iodizer ...	...	...	...	...	...	...	1 „ „

Take a 10 oz. bottle and fit to it a *good sound cork*. Wash the bottle, drain, and allow to dry *inside*. Measure ont the collodion* in a clean, dry measure, ponr into the dry bottle, and then add the iodiser. Cork the bottle, shake, and store the collodion in a cool, dry place. This collodion is used for coating the plates. The makers state that it can be nsed directly after iodising. It is better, however, to keep it a couple of days before nse. Label: "Negative collodion, iodized" (give date). Do not have the bottle more than about half full, as if so it will be found difficult to coat the plates.

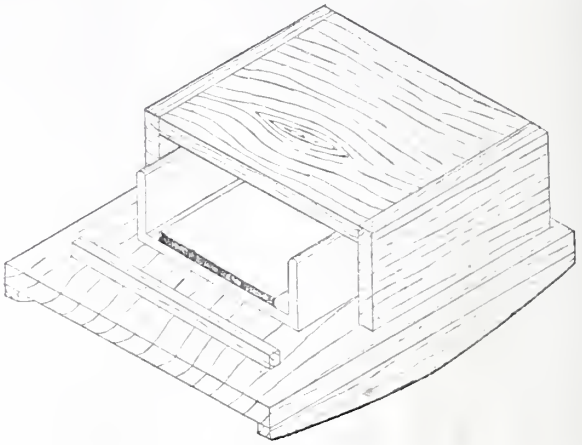


FIG. 4.

Have ready another clean, dry bottle, also fitted with a good cork. Label: "Excess collodion. *To be filtered.*" When coating plates, the second bottle is used to take the excess collodion poured away from the plates. When the stock bottle is empty, the collodion from the "excess" bottle is filtered back again into it.

Developing Solution.—In the first article in this series it was mentioned that the exposed plate was developed by flowing over the film a solution of ferrous-sulphate (iron protosulphate) and acetic acid in water. Instead of using the above solution the exposed film may be developed by using a solution of pyrogallol (pyrogallic acid) and acetic acid in water. The latter form of developing solution is not often adopted, the ferrons-sulphate being better. In certain cases, however, it is used, as when a plain iodized collodion containing no bromide is employed. It is found, however, that when pyrogallic acid is used as a developer the films have to be exposed for a longer time in the camera than in the case of ferrons-sulphate. For the present we shall adopt the iron developer. The greater the degree of concentration of the same the more quickly will it reduce the silver nitrate solntion adhering to the plate. If, therefore, a strong developer be used the various parts of the film which have been affected by light will quickly become points of attraction for the precipitating silver. In such an instance the deposit on the negative will be of a more



FIG. 5.

uniform or even nature than would be the case if a weaker (and more slowly reducing) solution were used. With the weaker solution the parts of the film where the most sub-salt has been formed—the high lights, for instance—having the greatest power of attraction, would attract quickly, the precipitated silver, immediately becoming nuclei to which the further depositing metal would be attracted, and the picture will, in this case, present greater contrast than if a stronger solution were used, the silver being attracted more strongly to those parts of the film which have been acted upon the most by light.

(*To be continued.*)

* When pouring out the collodion the greatest care must be taken not to disturb the sediment at the bottom of the bottle.

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No. 8. DECEMBER 1, 1893.

Lantern Season, 1893-4.

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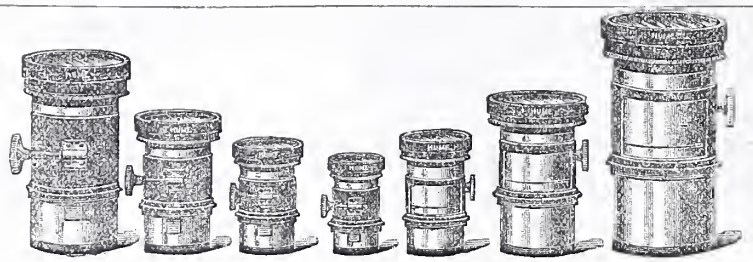
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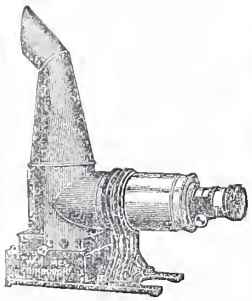
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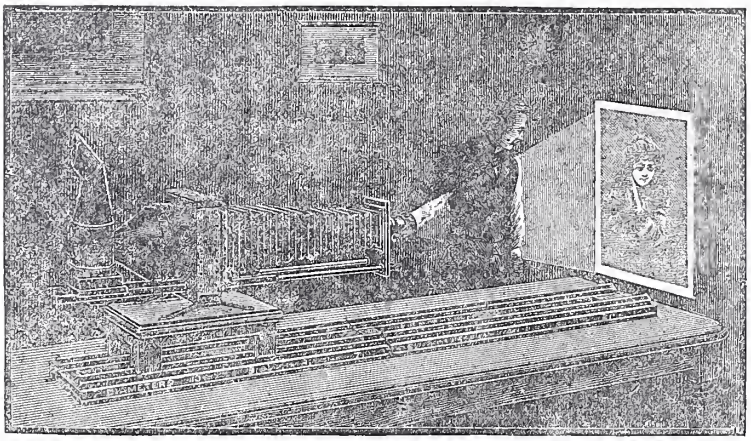
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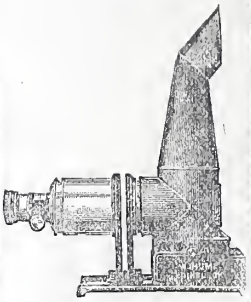
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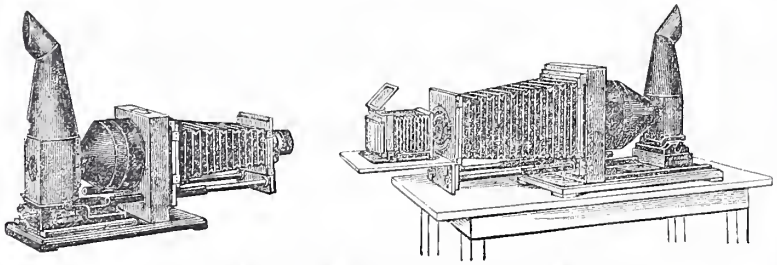
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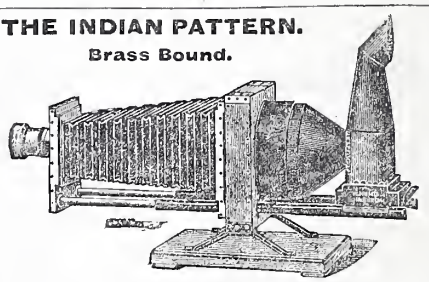
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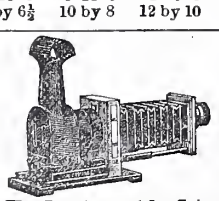


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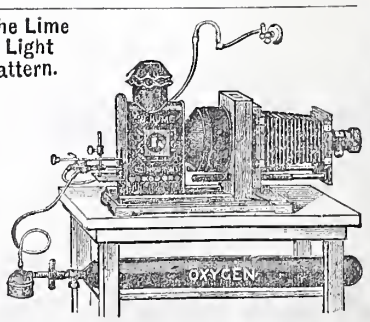
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OUR LANTERN SCREEN.

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Our Dissolving Views.

We have received an appeal from the Charitable Lantern Society for more slides. From the annual report, which we have also received, it is evident this society are doing very good work in amusing the inmates of hospitals, workhouses, etc., and we shall be glad to receive slides for this purpose, or they may be sent direct to the Hon. Secretaries, F. Simmons, of 158, Frances Terrace, Herne Hill, S.E., or B. Foulkes-Winks, 2, Pretoria Avenue, Walthamstow.

Mr. Paul Lange's lecture on "Norway" before the Central Photographic Club last Friday was a grand success, and taxed the capacities of the large room to its utmost. Starting by the Wilson line to Stavanger, Mr. Lange showed first a map of Norway with his route marked out in red, and then led his audience by means of his slides and description over about 500 miles of the most lovely country in this El Dorado of photographers. Leaving the beaten tracks followed by the numerous pleasure trips, he and his party, in carrioles and stolkjœrres, travelled up hill and down dale, across many a snow-clad plain and road, or places where roads had been, and where avalanches had wholly or partially destroyed them.

Everywhere, of course, on the road his camera was busy, not only in taking charming pictures, but also in securing characteristic scenes of Norwegian life and Norwegian habits and customs. The slides were, it is almost needless to say, of magnificent quality, and, backed up by Mr. Paul Lange's witty descriptions, jokes, and stories. Frequent and hearty bursts of applause testified to the appreciation of his lecture.

The slides shown were remarkable, not only for technique generally, but in all cases for their perfect rendering of the snow and ice. Too often we are accustomed to see snow as a blank white expanse absolutely without any detail. The sunrise and sunset effects were marvellous. One in particular represented a deep blue sea with deep red sun and orange and pale yellow clouds. These effects were obtained by photography alone, not hy painting with oil or water colours. One of the most amusing slides shown wasa representation of the use of the fire escape, which the law compels every hotel-keeper to provide each room with, for, as is well known, all the hotels are built of wood. This represented the flames rushing out from the top of the house, a friend of Mr. Lange's being lowered, according to the following directions:—

Directions for Fire Use.

Put the platted sling under your arms, and lower yourself through the window. To regulate the hurry, put the rope under the log. In case of more persons to be saved, take the reverse end of the rope up through the window and attach it as before, continue on so until nobody remains left.

To-night, Decemher 1st, tis an open night, Mr. H. M. Smith's paper on Films *v.* Glass being postponed to 15th inst. Visitors are always welcome.

On 21st ult. the judging of the lantern slides sent in to the Stanley Show took place with the following results:—

Gold medal	W. Taverner.
Silver medal	J. H. Gear.
Bronze medal	G. E. Thompson.
Diploma	R. Frost.
„	P. Martin.
„	J. Carpenter.

The quality of the slides was exceptionally good, and no less than twelve sets were left in for the final round. The most striking slides were those by Mr. P. Martin, who is to us quite a new worker. These were figure studies developed to a rich warm reddish tone, and with the whole of the hackground blacked out, so that they had the appearance of being really terra-cotta statues. They were evidently from hand-camera shots, and it is the most novel and striking treatment we have seen for many a long day.

The second members' lantern lecture of the new session of the Polytechnic Photographic Society is announced to take place in the Lower Hall, at the head-quarters of this Society, 309, Regent Street, W., on Friday next, Decemher 1st. Mr. S. J. Beckett will describe "A Trip through Norway," illustrated by slides from his own negatives. Mr. R. V. Hoare will take the chair at 8 o'clock. Visitors will be heartily welcomed.

In the face of the report of the inquest at the Bradford explosion, the interview with the Projectile Company, the makers of the cylinder that burst, which is publishcd in last week's issue of the *Ironmonger*, is of special interest. We make the following extracts from the same:—

"What in your opinion was the cause of the accident, or do you agree with Professor Goodman?"

"No one deplores the accident more than we do, but we do not agree with the suggestion of Professor Goodman as to the cylinder not having been annealed. Every cylinder we make is carefully tested before it leaves our premises, and every cylinder is duly annealed and entered in our books, so that we can issue the necessary certificate as to its suitability for the work to which it will he put. Not only so, we also know and keep a record of the steel we use for every class of cylinder we make, and also we have a record of the analysis of the steel employed. Beyond that we fail to see what more we can do." . . . "But allow me to inquire if the fact of overcharging the cylinder would appreciably disturb the structural qualities of the steel?"

"Yes, that is so. You see, in providing material for articles of this sort, two qualities have to he established: I mean tensile strength and ductility. By disturhing the latter and increasing the former—say, by over-charging or repeated over-testing—a condition of hrittleness is set up, and thus at once you convert a suitable material into an unsuitable one."

"May it be implied, then, that that would be the meaning of Professor Goodman's statement before the coroner that the cylinder was made of unsuitable material?"

"Professor Goodman, of course, spoke of the facts before him. The material, as he found it, was unsuitable without a doubt, and thus, as we can prove that the material we employed was of a suitable kind, and that the cylinder was in the best condition when it left these works, the natural conclusion is that something had been done to it in the meantime to vary its structural qualities."

"In this country we are very much behind Germany in the matter of tests. The business we do in oxygen cylinders is very small in comparison to what we do in carbonic-acid-gas cylinders for Germany and other countries, and we find that the German Government regulations are very strict. Before a cylinder can be used it has to be officially tested, stamped, and certified, and periodically it is returned to the testing-house to he re-annealed, and re-tested, stamped, and certified. If such an official regulation were imposed in this country I believe we should hear very little, if anything, of explosions."

"How often would you suggest that the re-testing and re-annealing should take place—every three months or so?"

"No; that would be too frequent, because if steel is re-annealed too often it does harm rather than good. Every six or twelve months would he frequent enough, according to the usage of the cylinders. It would entail a little expense, hut that ought not to be an objection. I would also require that the annealing should be done by competent workmen only. But a Government inspection should be compulsory, and the dates of such inspection clearly marked on the cylinder."

"Have you any further suggestions or observations to offer?"

"Well, I should like to say as a wind-up, that in our opinion the materials used for these cylinders should have a tensile strength of not more than 35 tons, and an elongation of not less than 20 to 22 per cent. We would further recommend that cylinders to contain oxygen and hydrogen should not be tested to more than 230 atmospheres, which would be 110 atmospheres in excess of what they are charged in the trade, this test offering, we believe, an ample margin of safety. The cylinder that burst in Bradford was tested to 298 atmospheres, in accordance with the written order of Riley Brothers, to whom we supplied it. In consequence of our being instructed to

test it and others to that degree, it became necessary for us to use a material of a high tensile strength, otherwise the vessel in question would have 'bulged'—*i.e.*, increased in diameter—and a permanent 'set' would have taken place. This, therefore, accounts for Professor Goodman finding that the material gave a tensile strength of over 50 tons. We should like to add that we do not blame Messrs. Riley for the instructions they gave us, as those instructions were in conformity with the practice of the largest and best-known gas-compressors in this country to order from us cylinders to stand this high-pressure test."

Our Monthly Lantern Slide Competition.

NO. 54—SEA PIECES AND RIVER SCENERY.

WE are glad to notice in criticising the slides sent in to this competition that the average quality shows a very considerable improvement upon the slides sent in to our last competition; and we must assume that our strictures have had a salutary effect upon our competitors. The chief faults in the present competition appear to be due to the fact that many of the slides have been printed by contact, and that the composition has suffered in many instances thereby. We must again complain of the manner in which several of the competitors have mounted and bound their slides, and we remind our competitors that in awarding marks for technical excellence these matters are taken into consideration. Although we have pointed out that circular and oval mounts can rarely be used



"The Wye, near Boughrood."
SILVER MEDAL. *J. W. Ellis.*

with good effect, those shapes seem to be very favourite ones with many of our competitors. We notice that some of the slides, although good in other respects, are unpleasant in colour, and this is a point to which we would draw the attention of our readers. Several competitors send us stamps for return of slides. It must be distinctly understood that we do not return slides.

CLASS I.

ELLIS, JOHN W. (Liverpool).—(1) "Near Bristol:" red., Ilford special, hydroquinone and soda, Ilford formula. (2) "The Wye, near Boughrood:" do., do. "Near Bristol" is a good technical slide, though not so good, artistically, as this competitor's second slide. "The Wye, near Boughrood" is a very charming riverscape, with a most beautiful foreground of rough-tangled weeds, which throws back the distance with charming effect. The colour of both these slides is very good.



"Newby Bridge, Windermere."
BRONZE MEDAL. *W. S. Ellsworth.*

BLATTE, A. H. (W.Kensington).—(1) "Surfs:" red., Round Tower, pyro and ammonia. (2) "The Blackwaters at Eversley:" do., do. Owing to this and the next set being so nearly equal in merit we have awarded a bronze medal to each. The second is a beautiful slide of a quiet rippling stream; colour good. The first slide is a very good study of waves breaking on a rocky coast, but would have been improved by the introduction of suitable clouds.

ELLSWORTH, W. S. (Liverpool).—(1) "On the Rothay, Grassmere:" con., Imperial, hydro. (2) "Newby Bridge, Windermere:" do., do. "On the Rothay" is hardly up to the slide which we reproduce, although the subject is a pretty one and the technique is good. No. 2 is a very picturesque old bridge over a stream, showing good technical work; the water and reflections are well rendered and are full of gradation.

GROOM, W. (Hereford).—(1) "By the Sad Sea Waves:" con. Thomas', hydro. (2) "A Bit of the Lyn:" do., do. "By the Sad Sea Waves:" this is a very fine composition, marred only by the oval mount employed. The subject represents a battered old hulk partially embedded in the sand, the reflection on which is very beautifully rendered. "A Bit of the Lyn" is a stereotyped view of a very much photographed spot, again spoilt by the use of a circular mount.

DART, W. B. (Bridgwater, Som.).—(1) "On the Parrett:" con., Thomas, hydroquinone. (2) Do., do. One of these slides suffers pictorially from the fact of the principal object being right in the centre of the slide; the composition of the other slide is capital, and both are good from a technical point of view.

GIBSON, J. (Hexham).—(1) "Winter on the River Allen:" con., Thomas, pyro-ammonia. (2) "Hoar Frost and Sunshine:" do., do. Two of the best slides in the competition, but each having been taken from almost identically the same point of view, the judges did not consider themselves justified in giving them a place.

SELBY, H.—(1) "Outward Bound:" con., Thomas, quinol, neg. on Paget 50 plate. (2) "The Royal River:" do., do., neg. on Star plate. "The Royal River" is a charming slide, both from an artistic and technical point of view. It received full marks, but it was considerably handicapped by the second slide, which was quite spoilt by its circular mount.

BOOTH, W. (Cardiff).—(1) "Watersmeet, Lynmouth:" con., Alpha, hydroquinone. (2) "On the Lynn, Lynmouth:" red., Ilford special, metol. Two fairly good slides carelessly mounted, of which "Watersmeet, Lynmouth" is considerably the better.

CLASS II.

WALKER, W. (Nottingham).—(1) "On the Trent:" con., Thomas, ferrous oxalate. (2) "Trent Lock:" do. "On the Trent" is a very

good instantaneous work. "Trent Lock" would have been improved by being placed in an oblong mount, which would have had the effect of cutting off some of the unpleasant white sky, of which nearly half the picture is composed.

STABB, J. (Bayswater).—(1) "Mouth of the Lyn:" con., Mawson, pyro-ammonia. (2) "Low Tide:" do. "Mouth of the Lyn:" this slide is of a rather unpleasant colour. "Low Tide" is better altogether. This competitor has just missed a good thing by placing the principal object exactly in the centre of the plate.

COOPER, H. N. (Stockport).—(1) "High Tor, Matlock:" con., Thomas, amidol. (2) "The River Derwent:" red., Fry, amidol. Both thin negatives and very yellow. Of these two slides the "High Tor" is by far the better, though the immediate foreground is not improved by the two hencoops. The other has a very black and white effect, probably due to the character of the negative.



"The Blackwaters at Eversley."
BRONZE MEDAL. *A. H. Blatte.*

COLEMAN, Rev. G. (Hull).—(1) "In Robin Hood's Bay:" con., Thomas, pyro-ammonia. (2) "Low Tide:" do. Both these slides are rather dirty in colour. "Low Tide" is not improved by the attitude of the two conventional figures in the middle distance." In Robin Hood's Bay" is better in this respect.

MCCLEERY, J. (Belfast).—(1) "On the Clwyd, N. Wales:" red., Cadet, hydro. (2) "A Freshening Breeze:" do., do. Two very good instantaneous subjects. "On the Clwyd" is a very pretty composition. Both slides are good technically.

HANCOX, R. (New Malden).—(1) "The Falls, Old Malden:" con. Thomas, hydro. (2) "June:" con., Imperial slow, hydro. In No. 1 the effect of falling water is very realistic, and the technique of the slide is good, although it can scarcely be called a river study. "June" is flat and weak, and the composition is spoilt by the group of trees in the centre of the plate.

SMITH, — (Liverpool).—(1) "A Bend in the River:" red., Mawson and Swan, pyro, negative 1 sec., *f*/16. (2) "Quietness:" red., do., exp. (negative), 4, *f*/32. Two very pretty slides, but in both cases development has been carried to the verge of fog. "A Bend in the River" is a charming riverscape.

FAULKS, T. H. (Cardiff).—(1) "Sunset:" red., Ilford, hydro. (2) "Breaking Wave:" do., do. "Sunset" is a good composition, the effect of which is spoilt by the general fuzziness of the slide. No. 2 is better in this respect, but the composition is not so happy.

WALKER, H. V. (Settle).—(1) "The Stow-Slaidburn:" con., Mawson, quinol. (2) "The Devil's Bridge, Kirkby Lonsdale:" con., Alpha, quinol. Two fairly good slides. "The Devil's Bridge" is spoilt pictorially by the introduction of the figure in the near foreground.

MARRIOTT, E. L. (Liverpool).—(1) "Kilbarn:" red., Thomas, hydroquinone. (2) "Lough Corrib:" red., Ilford special, amidol and soda. "Kilbarn," a flat slide of an unpleasant reddish colour, although the moving water is well rendered. "Lough Corrib," the companion slide, is a pretty composition, but is a little over-developed.

CLASS III.

LUDDINGTON, J. L. (Littleport).—(1) "The Wid, Yorks:" con., Paget, hydroquinone. (2) "Clare College Bridge, Cambridge:" red., Paget, hydroquinone. Both these studies are somewhat under-exposed. This competitor should learn that circular mats are very seldom appropriate to landscape subjects.

BREEZE, J. S. (Southport).—(1) "On the Derwent, Borrowdale:" red., Fry, hydroquinone. From half-plate negative on Edwards' iso. film. (2) "On the Derwent, Borrowdale:" red., Fry, hydroquinone do., do. These two slides, although showing some pictorial merit, are rather too dense, probably due to over-development. "On the Derwent," No. 2, is a pretty subject, but is spoilt by the absence of sky.

NEILL, D. J. (Aintree).—(1) "An Isle of Man Boat:" con., Mawson, hydroquinone. (2) "S.S. *Cephalonia*:" do., do. These slides lack vigour, which is probably due to their having been obtained from thin negatives. "An Isle of Man Boat" is a good example of instantaneous photography.

DAWSON, R. M. (Ealing).—(1) "River Mite, from Muncaster Bridge:" con., Norris' dry collodion, hydroquinone. (2) "River Irt, from Holmrook Bridge:" do., do. "River Irt from Holmrook Bridge" is somewhat under-exposed, thereby producing an unpleasant scene. The effect of composition would have been greatly improved by the use of an oblong mount, there being too great an expanse of foreground. The companion slide is good pictorially and technically, the foliage being particularly well rendered, but this slide is spoiled by the dome-shaped mount.

GOODALL, J. (London).—(1) "At Goring Church:" con., Mawson, pyro and ammonia. (2) "Goring Rock:" do., do. Fairly good technical work, but, knowing the district, we consider that the subjects have scarcely had justice done to them artistically.

BROWN, R. W.—(1) "River Llugwy:" red., Mawson's half, pyro and soda. (2) Do., do. Both these slides are under-exposed and the shadow detail is badly rendered.

"TRY AGAIN" (Surrey).—(1) "On the Wandle at Waddon:" con., Thomas, hydroquinone. (2) "On the Wandle at Beddington:" do., do. Two fairly good slides, both of which would have been considerably improved, from an artistic point of view, by being



CERTIFICATE. "A Bit of the Lyn." *W. Groom.*

mounted in oblong mounts, there being in each case too great an expanse of foreground.

NYE, H. (London).—(1) "Archrock, Freshwater:" con., Mawson, hydroquinone. (2) "Storm:" do., do. These two slides suffer in consequence of over-development, the shadows being very black and devoid of detail; a fuller exposure and the use of a weaker developer would have produced a better result.

ABSKON.—(1) "By the Limpid Stream:" con., ferrous oxalate, Ilford. (2) "At Grange Regatta:" do., do. Two flat and foggy slides—this may possibly be due to a limited knowledge of the use

of ferrous oxalate. We would recommend this competitor to try a somewhat shorter exposnre, developing with hydrokinone.

MILLER, A. L. (Glasgow).—(1) Running In:" con., Alpha, hydroquinone. (2) "Early Morning:" do., do. Both these slides reached us in a fractured condition, due to the careless manner in which they were packed. "Early Morning" is over-dense, and the high lights are very pronounced, producing a hard and disagreeable effect; there is also evidence of double toning. "Running In" is a capital study artitically, and, except for the evidence of donble toning, is also good technically.

RICHARDSON, J. T., MRS. (Nottingham).—(1) "The Big Troutie's Home:" red, imp. (2) "Far-away Skye:" red., Imp., hydroquinone. These two slides are among the worst in the competition from a technical point of view, being weak, foggy, and flat, but both show evidence of artistic skill in their composition. Less exposure and a more concentrated developer would, we think, lead to a better result.

DEAN, S. (Huddersfield). — (1) "Off the Arran Coast:" con., Ilford, hydro., negative Ilford ordinary, taken in a hand-camera. (2) "Ashwood Dale," do., do. "Ashwood Dale" is spoilt by the blurring of the foliage, and the white sky is very prominent. "Off the Arran Coast" is evidently printed from a very spotty, defective negative, and the mount has been badly cut.

CARPENTER, J. (Clapton). — (1) "Autumn Sunset:" con., Edwards, pyro-ammonia. (2) "The Thames from London Bridge," do., do. "Autumn Sunset" is a charming subject well rendered. "The Thames from London Bridge" is also very praiseworthy, but the oval mount is unsuitable for the subject, and the spots, which have been badly touched out, quite spoil this competitor's chance of a place.

MARTIN, H. B. (Liverpool).—(1) "Canal, Llangollen:" con., Edwards, pyro and ammonia. (2) "On the Alyn, Gresford:" do., do. Two very good technical slides. We should have preferred to see "Canal, Llangollen" in a square or oblong mount.

WISE, H. S. (North Devon).—(1) "Pilot Boat Calling at Ilfracombe:" con, Mawson, hydroquinone. (2) "Pleasure Boat at Ilfracombe:" do., do.; drop-shutter exposures. Two fairly good snap-snots. The "Pleasure Boat at Ilfracombe" is rather fogged.

GETHEN, C. (Hereford).—(1) "By Cooling Streams:" con, Ilford, hydroquinone. (2) "Eventide on the Wye:" do., do. Two very fair slides, the better being No. 2, "Eventide on the Wye," showing a flock of sheep under a steep bank on the river.

NUNN, H. (Manchester).—(1) "Welsh Coast from Menai Straits:" con., dry collodion, hydro. (2) "Carnarvon Harbour:" do. No. 1: this slide is spoilt artistically by the large, uninteresting expanse of water; a long narrow mount would have improved matters in that respect. Technically, the slide is rather flat, and its colour not good. No. 2, "Carnarvon Harbour," is altogether better, the slide being good technically and the composition also good. The water's reflections are particularly well rendered.

BUSCOMBE, L. J. (Devon).—(1) "On the Teign, Devon:" con., Paget, toned, sulpho-cyanide bath. (2) "On the Dart:" do. "On the Teign" is a very good slide. "On the Dart" is wanting in vigour, and suffers from what appears to be a flare-spot.

JAMES, A. W. (London).—(1) "Cattle:" con., Ilford, Alpha, quinol. (2) "Seaview Beach, I. of W.:" do. These two slides are of an extraordinary colour, "Cattle" being of an unpleasant red-brick tone. Coloured plates when of this colour may generally be improved by toning in the sulpho-cyanide bath. "Seaview Beach" is thin and flat.

ROBERTS, D. O. (London).—(1) "A Cruel Coast:" red., Ilford, eikon. (2) "The Old Lock:" do., do. "A Cruel Coast:" this slide suffers from the entire absence of clouds, otherwise the technique is good. "The Old Loek" requires a sky, and the slide is wanting in sharpness; it was cracked when we received it.

COLEY, W. H. (Lancashire) —(1) "A Quaint Bridge over the Calder:" red., Goodall's pyro-soda. (2) "Truly Rural:" do., do. We must take exception to the extraordinary thickness of this competitor's slides; in fact, we had to make use of a special carrier before we could pass them through the lantern. The "Bridge over the Calder" is very good technical work. "Truly Rural" is a somewhat commonplace composition.

CANAVALI, J. H. (Liverpool).—(1) "Peel Harbour:" con., England's; hydro. Taken with a Facile hand-camera. (2) "Peel Harbour:" do., do. Both these slides are under-exposed and over-developed, and consequently show an unpleasant amount of contrast.

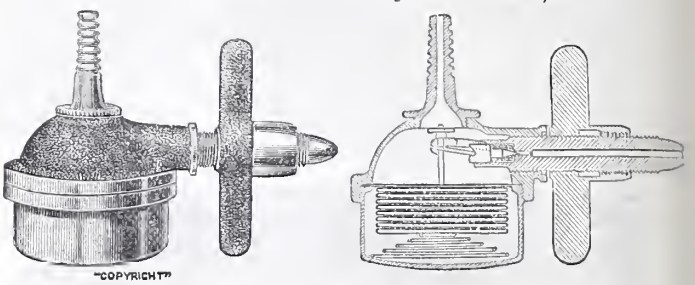
COMPTON, S. S. (London).—(1) "Chepstow Castle, Evening:" con., Thomas', pyro and soda. (2) "Avon Clifton Suspension Bridge:" con., Mawson, pyro and soda. Both these slides are very fuzzy and out of focus and flat—inexcusable in a lantern slide.

WOOD, D. (Chorlton-cum-Hardy).—"Bridlington Quay" and "Stratford Church." "Stratford Church" is a pretty subject, marred only by the circular mount. "Bridlington Quay" is a very good subject of the snap-shot order, and the slide is a brilliant one.

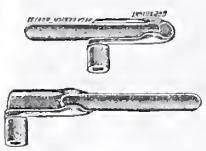
Lantern Novelties.

THE SCOTCH AND IRISH OXYGEN CO.'S NOVELTIES.

THE Scotch and Irish Oxygen Co., of Rosehill Works, Polmadie, Glasgow, have sent us a sample of metallic bellows regulator (Brier's patent), which is shown complete and in section in the following figures. This is adjusted to reduce the pressnre from 1,800 lbs. to

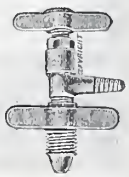


1½ lbs. per sq. inch. It is constructed of stout gun metal, and the metal bellows prevent any danger of snddon collapse, they are durable, and have the advantage of rubber or leather bellows in this respect. The whole is very strongly made, and we have used it with very satisfactory results.



The same firm have also introduced a folding lever key which enables one to obtain great leverage, and also shows the way to open the valve, and for closing folds baek within itself, becomes less powerful, and therefore prevents over-straining of the valve spindle. This is one of those adjuncts to a lanternist's outfit whieh every practical man will welcome.

Another useful pieee of apparatus is the fine adjustment of valve which is made for lantern and blow-pipe work, and regulates to a nicety the flow of gas under pressure, being provided with a stuffing-box and screwed gland. It can at onee be serewed down should any leak occur, and the spindle if damaged can be at onee renewed without renewing the whole valve.



Every lanternist should send for the catalogue of this firm, which includes several useful lantern aecessories, such as a cylinder stand, a folding ditto, all kinds of regulators and accessories connected with compressed gases. This firm, it is well known, carried out a series of exhaustive experiments with eylinders, the results of whieh have speeial interest just now in the face of the Bradford explosion, and which are fully detailed and deseribed in their catalogue.

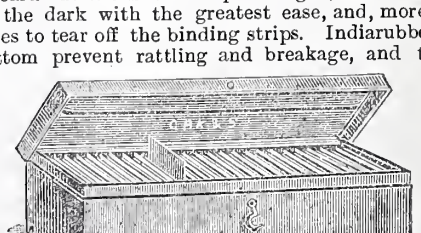
THE CANTILEVER ENLARGING APPARATUS.

WM. HUME, of 1, Lothian Street, Edinburgh, sends us the second edition of the above catalogue, and we can only commend it to every reader of "Our Lantern Screen." It is crammed with good practical hints.

G. B. KENT AND SON'S NOVELTIES.

G. B. KENT AND SONS, of Great Marlborough Street, W., have introdueed some very useful novelties, which are certain to be of great use to photographers.

First we have a new lantern box. The body is constructed of wood, neatly covered outside with cloth. The inside is divided by stout cardboard divisions of unequal height, and slides may be replaeed in the dark with the greatest ease, and, moreover, there are no grooves to tear off the binding strips. Indiarubber tubing at top and bottom prevent rattling and breakage, and the box is

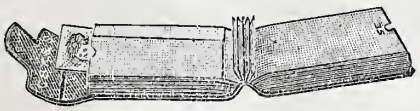


ventilated at each end, so that there is considerably less chance of the slides dewing. The box is extremely light and compact, and is one of the most satisfactory we have yet seen.

The second novelty is a film negative storage album. This practically consists of a series of stont white envelopes nnmbered, into which either the ordinary or cut roller films can be slipped.

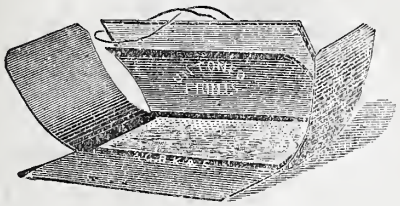
have found that the films are kept perfectly flat and the paper is a white demy of good quality, and the ease with which one can find a negative is striking.

For glass negatives Messrs. Kent have introduced a storage box, in which the negatives may be kept in separate envelopes and thus



dust and scratches avoided. Each negative can, however, be readily withdrawn or replaced.

Another useful and almost absolutely necessary novelty is a dark-slide protector, made of stout cardboard and lined with red flannel.



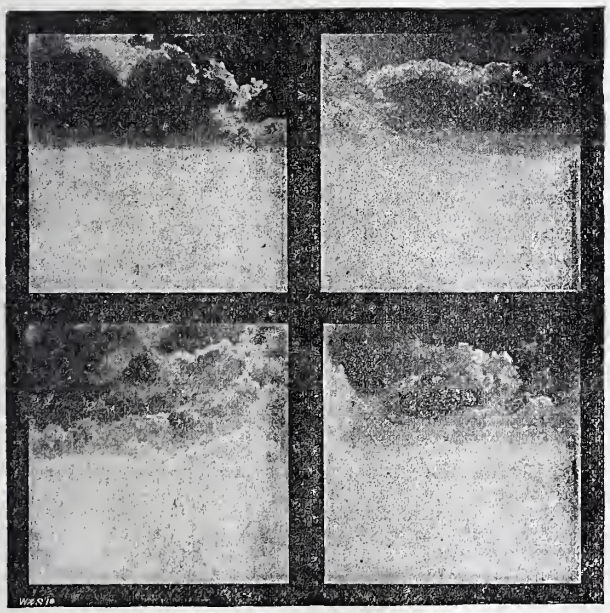
This forms a safe and efficient protector against stray light and accidental external damage.

Finally an untoned print case of stout card, lined with deep ruby fabric, will be found excessively useful for keeping prints as they come from the printing frame before toning. There is no chance of light gaining access, and so far as we have tried, the prints are better preserved in this than in the ordinary plate box.

All these novelties are reasonable in price—practical and useful to the careful worker.

PRIMUS CLOUD NEGATIVES TOR LANTERN SLIDES.

W. Butcher and Sons, of Blackheath, S.E., have sent us samples of the above, which will be heartily welcomed by all. It is an astonishing fact that up to the present such negatives have not been placed on the market. They are sent out in boxes of four, as shown in the accompanying illustration, price 2s. 6d. Directions for



use are as follows:—First make a trial exposure or two from cloud negatives only, at say three feet from gas. When developed and dry, mark on these time of exposure, the developer used, and the time taken to develop. Put these aside and keep for future reference. Make the exposure for subject on to lantern plate first. Should the sky be thin and print through, it should be roughly shielded. Mark the outside of printing frame at each side with a pencil to show depth of sky portion, taking no notice of any slight projection above the horizon. Replace the view negative by the cloud negative, taking are to keep the plate the right way up, and to place it so that the vignette of cloud negative comes across the horizon. (An ordinary quarter-plate printing frame is the best use, which allows latitude for arranging the vignette). Now expose for the clouds, the time, etc., being known from previous exposures. Any part of the lantern plate that is not covered up by the opaque part of cloud negative should be shielded by a piece of card or brown paper.

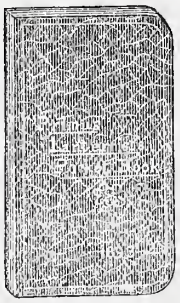
The negatives are on glass, varnished, and are good value for the money, and will be of great assistance to all lanternists.

THE CITO SCIENCE LANTERN.

Messrs. Platt and Witte, of Ridley Road, Dalston, N.E., have just introduced a new form of lantern. The body is made of Russian iron, and it is fitted with a blow-through jet, with cog-wheel and lever adjustment, and the lime is fixed in position by a cam lever, which can be readily moved with one finger.

The front is constructed with two wooden frames and leather bellows. The back is actuated by a rack and pinion, which serves to hold the carrier very firmly in position, the front slides backwards and forwards, and is fixed by a set screw. It is provided with a double pinion jacket to take cylinder lenses, thus enabling the operator to work at any distance from the screen, and to get any size disc. A small brass table is also supplied for science purposes, and this can be heightened or lowered by means of a screw, and can also be put at any distance from the lens. The whole fits into a stout box, the top forming an adjustable canting table, the front being made to let down, thus forming a shelf. The legs are made to detach. The complete outfit, with carrier and one cylinder lens of any foci, price £6 6s.

This is a well-made and ingenious set, and as there is room in the box for 200 slides, besides all the accessories, the whole forms a very complete outfit for a lecturer.



"PRIMUS" LANTERNIST" POCKET BOOK,

Published by W. Butcher and Son, of Blackheath, price 1s.

This is a neat little pocket-book, specially designed for lanternists. It contains, besides a six months' diary, a number of useful ready reference tables, memoranda tables for particulars of entertainments, slides in stock, quantity of gas in cylinders, etc.

All lanternists and secretaries of photographic societies will find this specially useful.

Apparatus.

SLATER'S MOUNT CUTTER.

Mr. W. F. Slater, of 169, Southampton Street, Camberwell, S.E., has placed on the market a very ingenious and useful accessory in the shape of the above, which is shown in the accompanying block. It will be seen that this is nothing more than a peculiar shaped knife, adjustable in a handle, which is hinged to a flat sheet of metal. The knife is adjusted so as just to pierce the card, and then drawn along to the desired figure.



From practical trial we can honestly say that with this the most inexperienced tyro can cut his own mounts to any shape with accuracy and ease. Price in brass, 25s, in iron 12s. 6d.

Photography at the World's Fair.

BY JOHN FRETWELL.

Providence, R.I., 15th November, 1893.

ALTHOUGH the exigencies of business prevented me from taking the pleasantest route from England to Chicago, that by the St. Lawrence River, the desire of seeing my Canadian friends induced me to go from this place by the Canada Pacific, and return by the Grand Trunk Railroad, spending some days at Montreal and Toronto by the way.

From Toronto I crossed Lake Ontario to see once more the great Falls of Niagara.

The great gorge through which the river passes after its mighty leap is called the Geologists' Chronometer, for by it our modern geologists endeavour to estimate the time which has elapsed since the great glacial ice-cap extended over the whole of Canada and the Northern part of the United States.

As one geologist estimates the time at 3,500,000 years, and another at 7,000, it is not yet a very accurate chronometer after all. It is, I think, the most over-photographed place in the world. It is a favourite place to spend the honeymoon, and the photographers keep on hand sets of negatives, from which, by double printing, they manage to combine all sorts of Niagara views with the portraits of newly-married couples. I intended to be very economical with my Blair films, but, carrying my Hawkeye across the lake, found on the second day that the films which I had thought sufficient for my whole stay at Chicago were exhausted at Niagara.

Going to the only dealer in the town to replace my roll, I found that he charged just two shillings a roll more than I had paid for the same film in London, though it was of American make, and that I should have to pay another shilling for the use of a dark-room. So he lost a customer, and I postponed further operations till I could go to the manufacturer's rooms in Chicago. There, however, I had no time for photography.

Some one has calculated that to see all the exhibits at the World's Fair, allowing three minutes per exhibit, would occupy about thirty years, and since I only spent seventy days there, and had business all the time, I cannot pretend to give you an exhaustive report even upon photography. Neither would you have space to print it.

I can only tell you what especially attracted my notice, with the proviso that much of equal importance may altogether have escaped my attention.

Close to my lodging, at the very gates of the Exposition, was a lofty observation tower of iron, and ascending this I found a fellow amateur, a member of the Chicago Club, fixing up a camera to which he had attached a Clemens and Gilmer telephotographic lens. He complained that he had not been able to get a sharp picture with it, but as the tower vibrated perceptibly, I could hardly blame the lens.

In attempting to use this lens, which is not instantaneous, I have found it necessary to put my camera in a position where it was sheltered against the slightest breath of wind or any other cause of vibration.

He invited me to the hospitalities of his club, but, unfortunately, I had no time to avail myself of his kindness. Inside the Exposition we were allowed to carry only hand-cameras, making pictures not larger than 5 by 4 inches, and I waited until the last days of the Exposition before I resolved to pay the tax of two dollars per day, or five dollars per week, demanded by the concessionaires. In this time I had occasion to observe the annoyances to which the would-be photographers were subjected, and the tricks which many of them used to evade the regulations. Many of them were carrying camp-stools and solid square lunch boxes, and when there was no Columbian guard in sight, by mounting the lunch box on the camp-stool, would construct a very fair substitute for a tripod.

The use of stereoscopic cameras was prohibited, but two friends, each carrying a Kodak of the same focal length, would place them side by side on the same lunch box, and so get double pictures whose stereoscopic accuracy was possible, if not exactly certain. Now and then a man in plain clothing would approach these gentlemen, accost them as a brother amateur, and when he had investigated their ways, unbutton his coat and showing the badge which proclaimed him a private detective, call in a Colombian guard to arrest them. Then there was a scene which made me wish that I had a camera at hand to photograph it.

It is, I think, the most excruciating torture of the amateur photographer's life that he never has his camera at hand when such a scene occurs.

Another exquisite illustration of American life and manners which I would gladly have photographed was the following:—

Four neatly-dressed American citizens, of African descent, entered the Kentucky restaurant and asked for food. Not a single waiter would serve them.

I had been in the same restaurant a few days before, on Odd Fellows day, and just after I had given my order, a man, who, from the ostrich feathers and other toggery that he wore, seemed to be a high cockalorum among the Oddfellows, entered with his wife, and, sitting down, deliberately emptied the excreta of his nose and mouth upon the floor, in full sight of his wife and the other guests. I need hardly say I could eat nothing after such a scene as this, but not a single person remonstrated with him; while the decent, well-conducted African Americans had been refused the food which, according to American law and Christian courtesy, they had a right to demand.

A photograph of the two scenes would have splendidly illustrated an essay on the gentlemen of the South.

But five dollars a week and the certainty of having your every step dogged by detectives is a high price to pay for the privilege of carrying your Hawkeye everywhere.

In other cases when an amateur wished to take photographs, people would deliberately put themselves in his way to prevent it, and in one case when I carried a camera myself, after it had become too late to make a view even outside the buildings, I entered the Art Gallery in order to look at the pictures. Though it was absolutely impossible to photograph the pictures by the dim light inside the building, a guard informed me that even at that late hour I must not enter the building with my camera unless I had a special pass. I said, "Do you think I am such an idiot as to photograph in this light?" He replied, "For ten cents you can leave your camera at the door;" and I said, "Oh, there's the rub; you want to force me to pay a dime to the parcels man. I would willingly do that, but I would not trust him with my camera." Everything was done to force people to pay out money for extras. Even the tanks of drinking water were left empty that thirsty folk might be forced to buy a glass of someone who had bought a concession.

The most interesting exhibits of photography were those outside of the professional exhibits.

The excellent example set by the Great Eastern Railway in England in decorating its carriages with the photographs of Payne Jennings has now been followed for advertising purposes by all the great lines in both hemispheres.

In the Transportation Building the Canada Pacific had the painted photographs made by Notman, of Montreal, showing the great Glaciers and Rocky Mountain scenery.

Colorado, Utah, and California exhibited the magnificent work of Jackson in Denver, or Savage in Salt Lake City. The Pennsylvania Railroad had work done by Rau, and by Gutknecht, of Philadelphia. A German firm supplying machinery for the blasting operations at the iron gate on the Danube had magnificent photographs of the scene of operations.

The Smithsonian Institution at Washington, founded by an Englishman, the natural son of a Duke of Northumberland, exhibited large bromide transparencies showing the ethnologic features of the United States Territories. Germany and France sent colossal photographs of their monumental edifices; Jamaica a series of photographs to illustrate its attractions as a winter residence for American invalids; in fact, photography might dispute with electricity the palm as the leading feature which distinguishes the Columbian Exposition of 1893 from all its predecessors, even if all the professional exhibits were left out of sight.

Many of those photographs which from a technical point of view were the worst, were really the most interesting, because taken under circumstances which put technical excellence out of the question.

As I am not a professional, I cannot pretend to criticise any from a purely technical point of view.

In walking to the exhibit of American professionals, in the Liberal Arts Building, I saw the sign of "The 'Britannica' Company," and found a complete set of the "Encyclopædia Britannica," which, according to the advertisement, had been photographically reproduced from the original by a New York firm, some five volumes of especially American matter being added to it.

Here is the product of British brains, British industry, British enterprise, copied by photography, and sold for the benefit of an American speculator. I could give you no more characteristic type of the difference between the American and the European photographic exhibits than this, and the heavy customs duty which deprives the European of every fair chance in competition with the American.

Your manufacturers, under free trade, can do no business at all unless they compete with the foreigner, who is admitted to England on equal terms, and so in London you always find the best in all the world, and give credit to him to whom credit is due.

We shut out the foreigner, and the Americans take both the credit and the profit of his work.

In almost every American exhibit you might find something that was really French, or German, or British. There were panoramic photographs that were evidently made with the apparatus either of

Damoizeau or of Moessard, yet in no case did I observe that credit was given to the foreigner.

In the Swiss exhibit, on the other hand, was a fine photograph of Mont Blanc, taken from a distance of forty-five miles, by Boissonnas, but Mr. Boissonnas was honourable enough to publish the fact that it was made with Dallmeyer's telephotographic lens, and I am very sorry that the Americans were not equally ready to give credit to the foreigners whose brains and instruments they had used for their own profit.

A most interesting exhibit in the American Department was a panoramic view of the Philadelphia Exhibition of 1873, by Gutknecht, made on several plates from the same point of view, and then combined in one print. As a sample of the best work possible at that time, it was of great historic value, as showing the progress made now by cameras invented by the French and used for this exhibition with the most beautiful results.

These panoramic landscapes were to me the most attractive part of the American exhibit, for while as landscapes they require a special apparatus to see them as we should see the original, they are of great value in surveying as a control for geodetic measurements.

The portraits reminded me of our American politics, "much machine and little man;" they were mostly very smooth and over-retouched. Of course, there were several photographs of tableaux vivants, representing scenes from Enoch Arden, King Lear, Tennyson's Elaine, etc., which were as good as anything that I have seen within the necessary limitations of this style of work, but even if the sitters for such groups had all the talent of an Irving or a Coquelin, they are still nothing but photographs of living beings in costume, and can never equal the work of a painter in ideal effect.

The extreme of bad taste in this line was shown by a series of photographs intended to represent Christ in various attitudes. There were some very big photographs of microbes by Radam (a man who advertises very largely a liquid which he calls the "Microbe-killer"), and some excellent samples of photogravure, in which America takes a very high place.

Of course, America must have the biggest of everything, and so it has the "biggest photograph in the world," by Strauss, of St. Louis. It represents simply the letters forming the words, "Largest Photograph in the World," with figures of little children playing about them.

The negative is said to have been made on nineteen dry plates, each 18 by 22 in. These being fitted together and retouched, a large print is made from them, and when its blemishes have been corrected, a new negative is made, and from this the final print, 16 ft. long, is produced. Of course, an enormously large developing dish is required. But *cui bono?* What is the good of it? If a panoramic negative of this size had been made in the splendid camera of Damoizeau, with a Blair or Eastman film, some artistic or scientific purpose might have been served by this great expenditure of money and labour, but in this case the result, however good the technical execution may be, is worthless.

As to the instruments, they form a very good shop exhibit, as might be expected from manufacturers who are protected from foreign competition by the MacKinley tariff, and differ from European goods only by the excessive price, excepting in the case of the Eastman and Blair exhibits, which are so well known through their London agencies that I can say nothing new of them here.

If you had space, I could devote a few pages to the use of photography for scientific purposes by some of the Universities, especially Harvard and Cornell.

Catalogues.

NEWTON AND CO., 3, Fleet Street, E.C.

A supplementary list of the new slides for this season, which comprise series of the Tower, Switzerland, and the Alps, Spain, Italy, India, and numerous scientific and technical subjects.

ALFRED UNDERHILL, of 32, Clarendon Road, West Croydon.

Mr. Underhill sends his list of slides, and prices for painting and designing same. We note he has just added a new series of photo-micrographic slides dealing with botanical subjects, and illustrating both morphologically and histologically the minute structure of plant life.

FALLOWFIELD'S PHOTOGRAPHIC REMEMBRANCER AND TRAVELLER for the end of October has come to hand, and is as usual full of good things, both in job lines and novelties; special attention being paid to lanterns, flash-lamps, and all winter requisites.

AMATEUR PHOTOGRAPHIC REQUISITES. Published by the London Stereoscopic and Phot. Co., 106, Regent Street, and 54, Cheapside, E.C. Price 6d.

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SPIERS AND POND, Water Lane, Ludgate, and Queen Victoria Street.

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ROSS AND CO., 111, New Bond Street, W.

We have received a very complete catalogue of lenses, microscopes, and photographic requisites from this firm, with, we note, considerable reduction in the prices of some of their lenses. We are also glad to note that they have placed on their list the series II. and III.a of Zeiss' lenses, and that they have also been appointed sole manufacturers in England for Goerz's double anastigmat lenses.

Reviews.

Compendium der practischen Photographie, by F. Schmidt. Published by Otto Nemnich, Karlsruhe. Price 4s. 6d.

The work before us is the second edition of a thoroughly practical book, written by one who is a teacher and director of the Karlsruhe Photographic Institute. The choice and use of apparatus is first considered, and then the various operations are considered in turn, and all the latest advances are included. The printing processes are also treated in a thoroughly practical manner, and finally enlarging and reducing and the production of lantern slides are considered. Numerous tables and formulæ make the work more complete, which is illustrated with numerous diagrams and illustrations.

Christmas Numbers.

As usual at this time of the year, we get a deluge of Christmas numbers. Every bookstall and newsagent's is brightened by pictures more or less highly coloured, which form the *pieces de resistance* of the special paper with which they are published. We have received the following:—

The Gentlewoman Christmas Number.

This is issued with two special supplements, one printed on white satin, being a *fin de siecle* rendering in colours of the time-honoured nursery rhyme, "Little Red Riding Hood," which as a specimen of chromo-lithography leaves nothing to be desired. The other is one of Louis Wain's well-known cat pictures. The reading matter is of the usual character of fiction, bright and lively, with a liberal admixture of love. The first story, "Bid me not Go," is written in imitation of a well-known novelist, and a prize of twenty-one guineas is offered for the discovery of the supposed author.

Detroit Free Press Christmas Number.

This relies solely upon its literary matter and the interspersed black and white illustrations, the leading tale being one of E. W. Hornung's characteristic Australian bush stories, entitled "The Boss of Taroomba."

Haltwhistle.—On the 15th ult. an exhibition of prize lantern slides was given. Dr. Speirs, the President, occupied the chair, and described the views as they were thrown on the screen. The exhibition was witnessed by a large audience.

Photo-Micrography and Mr. Chadwick.

IF to any man is due the credit of reviving a lost or almost forgotten, or at any rate a disused, branch of photography, it must certainly be accorded to "that apostle of stereoscopy," W. I. Chadwick, of Manchester. Before Mr. Chadwick set to work to revive the interest in stereoscopic photography, only a very few amateurs paid the slightest attention to it. Indeed, there were hundreds, we might say thousands, of amateurs who knew nothing or very little about it, but now we see stereoscopic cameras here, there, and everywhere; old stereo cameras that had been lying by for ages have since been rubbed up and brought into active service, and their



FIG. 1.—FOOT OF HOUSE FLY.

possessors can only wonder why they ever gave up this most delightful style of photography. Then the fact that the public have again taken kindly to it is manifest by the vast number of slides and stereoscopes we see about in the shops, and the many commercial firms who have been made busy by a big demand for slides.

However, it is not on stereoscopy that we intended to write, but



FIG. 2.—THE FEMALE FLEA.

on another neglected branch of photography in which Mr. Chadwick has thrown his energy, viz., photo-micrography.

The members of the P.S.G.B. had a treat at a recent technical meeting by an exhibition of about forty large photo-micrographs and a frame of fine lantern slides by Mr. Chadwick, who, in describing his *modus operandi*, said there were few branches of photography worthy of more attention than photo-micrography, and when once on the right track, he could think of nothing more fascinating—unless, of course, stereoscopic photography. But the difficulty for beginners to get on the right track had not been met by much of what had been said on the subject of late; on the contrary, many were quite discouraged by what they had read, and he wished it to be clearly understood that he had not come there either to show high-power work, such as bacteriology, or even the markings on certain diatoms, but to exhibit popular subjects, and the way of producing photographs of such objects as most amateurs would require for the entertainment and instruction of their friends or popular audiences, and these could be generally secured by objectives of from 1 in. to a ½ in. (fig. 1). The first thing to be done afte obtaining good specimens was to get an idea of the principle of the apparatus required, and although this may differ in arrange

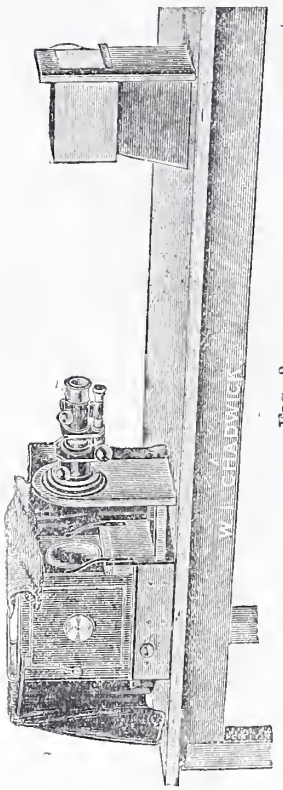


FIG. 3.

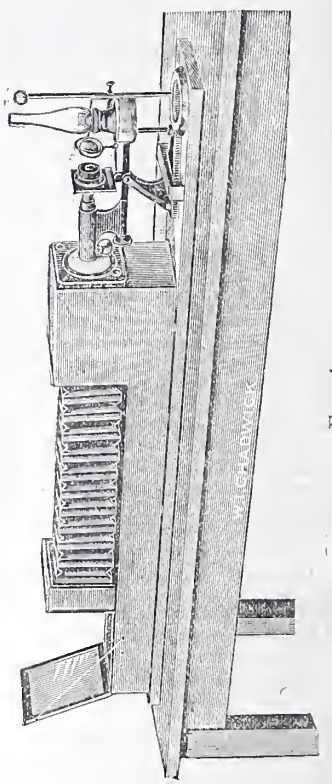


FIG. 4.

ment and mechanical details, the principle was practically the same as that of the ordinary magic lantern. For instance, in the latter instrument we have a light, a condenser, a slide, an objective, and a screen, and in a photo-micrograph apparatus we have just the same parts, only in this case the screen is a sensitive plate.

It was very necessary to have a good objective, but not necessarily a high-priced one. Much had been said in favour of some of foreign make, and also in favour of so-called projection eye-pieces, and with which after considerable experience he could lend no support. There were English objectives of the very highest quality to be had for the modest sum of 30s., which would answer all the requirements of most amateur photo-microscopists, and it was such instruments he had mostly used (fig. 2).

The next important consideration was the lighting of the object, and here the general construction of the apparatus required attention, for the mechanical details were simply to combine the optical parts and to facilitate in their manipulation.

Then there could be no doubt that a magic lantern with a microscope attachment offered the greatest advantages. A good firm table was necessary, on one end of which the lantern is placed, with a half-inch wick paraffin lamp supported by the pillar on which the lime-light jet is usually attached. The lantern condenser collecting a wide angle of rays are converged into the field (fig. 3.) or back lens of the microscope and again converged by substage condensers on to the object, and projected by the objective on to the sensitive plate, which is contained in a very simple and inexpensive carrier at the other end of the table. This, of course, to be done in a dark-room, otherwise a long bellows-body camera would be necessary. The adjustment of the light by the lantern and the substage condensers of the microscope attachment were shown to be very easily accomplished. The focussing having been approximately secured, the instruments need occupy no further attention, for final focussing may be done by moving the plate-holder nearer to or further from the instrument, for which purpose a plain glass with scratch marks is inserted and examined by a focussing glass (fig. 4). Substituting a sensitive plate for the plain focussing glass, an exposure of from three or four seconds up to as many minutes is all that is necessary. Respecting the sensitive plates, Mr. Chadwick said he had used both

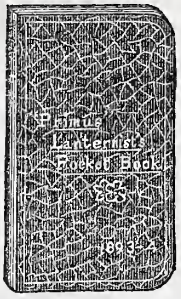
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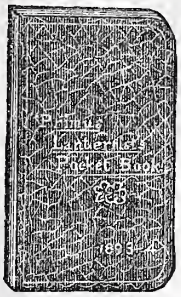


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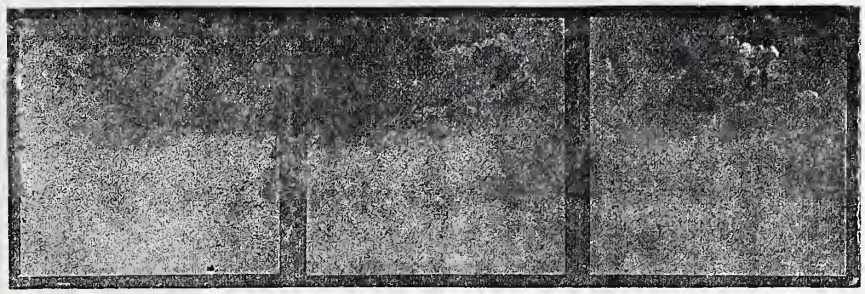
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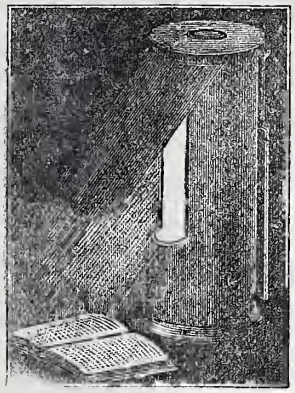


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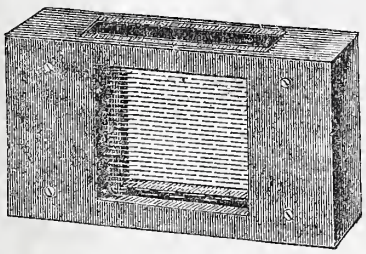


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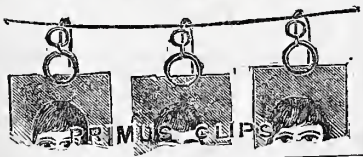
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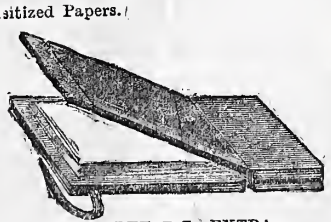
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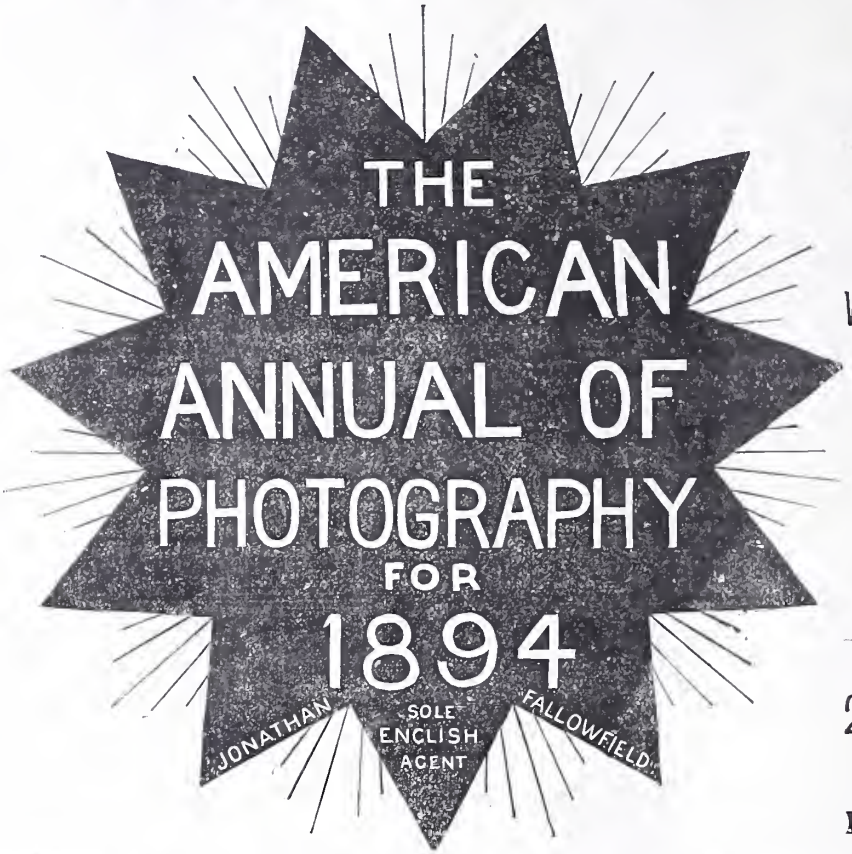
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colour-corrected plates and ordinary for the objectives he used, and or some objects it was no advantage to use colour-corrected plates

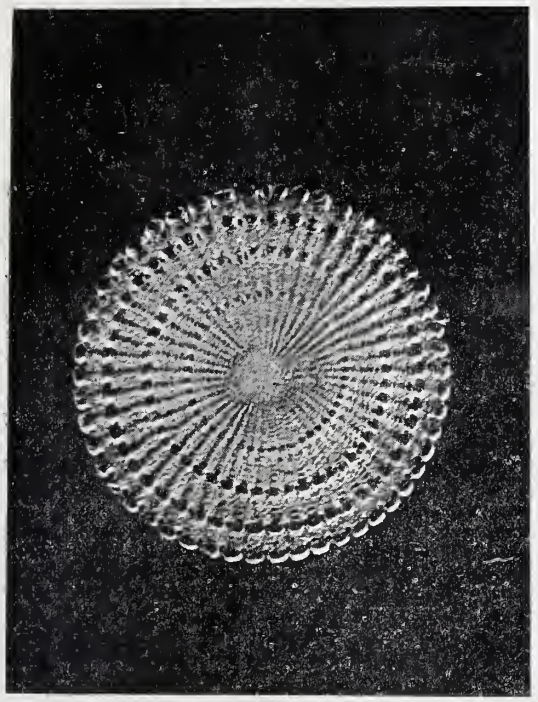


FIG. 5.—SECTION OF ECHINUS SPINE.

Indeed, he had obtained some of his best results on Sandell plates He had seen some results said to be the best that could be made by

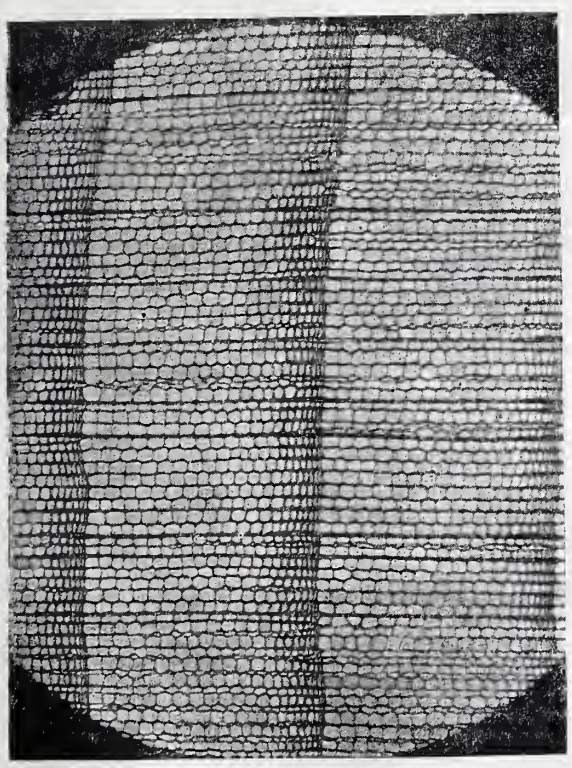


FIG. 6.—SECTION OF DRY DEAL.

certain uncorrected lenses on ordinary plates which seemed little better than could be made with a glass bead and such objectives he had had no experience with.

With such appliances as exhibited Mr. Chadwick claims to be able to do the most critical work, and for such subjects as botanical specimens, parts of insects, and many historical specimens, the fixing up of the whole apparatus ready for exposure need not occupy more than five or ten minutes at the outside (fig. 5).

But there are those who, being already the possessor of a table microscope, do not care to invest in the luxury of a lantern microscope; and here was shown a very convenient bellows-bodied camera with an ordinary microscope attached (fig. 4). The connection between microscope tube and camera was a disc or diaphragm of sheet rubber, the hole in centre being somewhat smaller than the tube of microscope. The same principle of focussing was adopted, and wonderfully faciliated by a hinged mirror at one end, by which the focussing screen could be observed whilst manipulating the microscope until the position and adjustment of light, etc., had been obtained (fig. 6).

In reply to a member, who advocated a mechanical stage to the microscope, such as he had had applied at a cost of £8, Mr. Chadwick said that the price alone at once declared it "off," but, independent of the expense, he did not believe in introducing mechanical appliances for such adjustments, as he could perform very much easier with his fingers. In the case of lighting, or adjustment of the light and condensers, the thing was very different, and here mechanical adjustments were more convenient than essential. He had seen even experienced microscopists "fiddling" at their substage and condensers for half an hour, trying to set up a certain illumination, and practically working in the dark because they neither knew nor could they see what it really was they were trying to do. In the lantern microscope the rays may be seen both entering and emerging from every lens in the instrument.

For use with high powers, such as a one-sixteenth or a twentieth oil immersion objective, he used the limelight; but from 3 in to a ¼ in. objective he had found the ½ in. wick paraffin lamp all that was necessary.

A few of Mr. Chadwick's photo-micrographs have been reproduced in this notice, as well as the two forms of instruments illustrated, with a hope that it may stimulate others to take up this most useful and instructive branch of our art-science.

Competitions.

	Subject.	Latest Date.	Entry forms to be had from
AM. PHOT. Monthly Lantern Slides	Portraiture	Dec. 14	Printed in weekly issues
AM. PHOT. Holidays with Camera	Photographs taken during holidays.	Dec. 31	Will be printed in paper
Advertisement Competition	—	Nov. 30	None required
Optimus' 100 Guinea Competition	All Classes	Dec. 31	Perken, Son, and Rayment

Liverpool (Camera Club).—A meeting was held on 8th ult. Mr. T. Edwards, Vice-president, presided. The President, Mr. J. Hawkins, gave a very interesting paper and demonstration on lantern-slide making. The demonstrator made several lantern-slides, both by contact and reduction, from negatives of a varied character, amidol being the developer used; the results were everything that could be desired.

A Seismic Photochronograph.—In *L'Ettricista* for November Dr. A. Cancani describes an instrument for recording photographically the precise time at which an earthquake shock is felt at the observing station. This is done by obtaining a photograph of the face of a chronometer at the instant of the shock In the apparatus in question the chronometer is illuminated for an instant by an incandescent lamp thrown into circuit by any one of the seismic instruments in the observatory. The mechanism, which is rather complicated, consists essentially of a horizontal lever carrying a pan with nine potassium bichromate pots on one arm, while the other is provided with weights, and is kept in position by the raised armature of an electromagnet. When the circuit of the latter is completed by one of the seismoscopes, the armature is attracted, the bichromate pots are raised, and the zinc-carbon couples fixed above them are immersed in the liquid, thus supplying the current for the lamp. After about a quarter of a second the lamp circuit is broken by one of the weights sliding off the lever, and the whole apparatus is automatically readjusted for the next shock. It has been in use at the Rocca di' Papa Observatory, and has worked well.

Exhibitions.

THE LEYTONSTONE CAMERA CLUB.

THE second exhibition of the above was opened on 20th ult., and remained open till the 25th. The exhibition was a very good one, and included some good work.

Class A: Mr. Geo. H. Cricks wins the silver medal for 35, "An Essex Swamp," a very cleverly treated picture; the companion picture, 36, "At Canvey," being also good. Mr. D. G. Riddick takes the bronze for No. 4, "Where Twines the Stream," a simple bit of landscape; and H. H. Summers, an extra bronze for No. 74, "The Breath of Winter." It is curious to note how low in tone these pictures are; evidently this is preferred by the judges now. Other noticeable work in this class is by E. A. Colledge, the most striking of his work being 58; Nos. 76 and 76a, by Mr. Summers, are also very striking.

In Class B, architecture for members, the judges did well to withhold the silver medal, the bronze going to J. H. Gear for 102, "The Choir, Westminster," which is noticeable from the absence of heavy black shadows. One or two of the exhibits in this class are noticeable for leaning lines.

In Class C the silver medal was awarded to 118, "Que voulez-vous, m'sieu?" by T. Symmons, but the medal "was withheld by rules."

In Class D for Enlargements, Mr. Tom Symmons takes the silver medal for "Winter," which is, to our thinking, a little black and heavy and does not not carry out the title. J. H. Gear's now well-known "Handel's Organ" is also shown in this class; and Mr. Cricks has some lovely work. The bronze medal goes to 128, "Sunset," by C. A. Russell, which we think could be made a good deal more of in printing.

In Class E, for lantern slides, Mr. A. E. Bailey takes the silver medal for some very unequal work, most of it too black and heavy; whilst Mr. H. E. Farmer takes the bronze for, we think, better work.

In Class F, open class, champion, the gold medal is withheld, and the silver goes to J. B. B. Wellington, for his well-known "Eventide;" another silver also going to W. Thomas, for 178, "Sunset." This class, as might be expected, is strong though not numerous, as there are medalled pictures by R. H. Lord, Moss, and Brownrigg and Byrne.

In Class G, open prints of all kinds, the silver goes to Shapoor N. Bhedwar for 331, "The Voice of Silence;" and R. S. Webster takes a bronze for "When the Evening Sun is Low," which took the gold at the Stanley Show. Another bronze to J. H. Anderson for a very fine Thames scene, "An October Sunset." Another bronze to S. C. Bennett for "Wapping Pier," another exquisite Thames scene. This class has drawn some really good work; some of the pictures here are charming, particularly the work of Bennett, Moss, Kidson Taylor. In this class, too, are such well-known workers as H. P. Robinson, Warneuke, Wellington, West and Son, F. W. Edwards, Martin J. Harding, Dresser, Avery, etc.

Class H, the silver medal goes to G. Hankins, for an exquisitely soft set; and 376, by P. Martin, a set a figure studies, which are, we suppose, from hand-camera shot and painted out in imitation of terra-cotta figures. Noticeable also are the nude studies of children.

A small show of apparatus was made by Messrs. B. J. Edwards and Co., of The Grove, Hackney, and Henry Park, Station Buildings, Kingsland; and entertainments in the shape of Edison's phonograph, microscopes, stereoscopes, and instrumental and vocal music with lantern exhibitions were provided. And the loan exhibition of pictures included work by Elliott and Son, The Autotype Company, Horsley Hinton, Ralph Robinson, the London Stereoscopic and Platinotype Companies, Waterlow and Sons, and others.

Societies' Notes.

SHROPSHIRE CAMERA CLUB.—The first annual dinner was held on 20th ult., and was a big success. The President (Mr. F. W. Williams) was in the chair, supported by the Mayor of Shrewsbury, Deputy Mayor, Town Clerk, and Mr. Blakeway-Phillips, C.C., and about forty members and friends. The usual toasts were given, interspersed with songs, recitations, etc., and a thoroughly enjoyable evening was spent.

THE Central Photographic Club has now on view the first of its "one man" shows, which is devoted to works by Mr. Thomas Fall. Visitors are admitted on production of visiting card. To-night, December 1st, is an open night; on the 8th, Mr. Algernon Brooker, of Hastings, will give his lantern lecture on "Winchelsea and Rye," when visitors will be welcome; on the 15th inst. Mr. H. M. Smith will give his notes on "Films and Glass." The dark-room is now ready for use, and dishes, measures, racks, and hypo are provided, but at present visitors must provide their own developers. We understand that elementary classes are to be provided for beginners, and several well-known men have promised their help.

THE Leigh Photographic Society will hold an exhibition of members' work on February 15th, 1894.

Societies' Meetings.

Accrington.—The annual meeting was held on 6th ult., Mr. Cheney in the chair. The report was fairly satisfactory, and spoke of the good work done during the past year. The membership has slightly increased, and more meetings have been held. The competitions and lantern slide exhibitions have added much to the popularity of the society. The treasurer's report showed a small balance to be brought forward. The following officers were elected for the ensuing year:—President, Dr. Clayton; Vice-Presidents, Mr. A. Barnes, Mr. J. Barnes, Mr. W. L. Bunting, Mr. W. J. Cheney, Dr. Geddie, Mr. A. Hitchon, Mr. J. Haworth, Mr. J. Peters, Rev. J. R. Rendell, and Mr. T. Stanley; Council, Messrs. F. Bradshaw, Wm. Clayton, A. Greenwood, S. S. Haywood, R. R. Moore, and J. Oldham; Hon. Treasurer, Mr. B. T. Westwell; Hon. Secretary, Mr. J. Hanson, Rothwell Heights, Accrington. At the close of the meeting a set of local views were passed through the lantern by the President.

Ashton-under-Lyne.—7th Nov., a public exhibition of the *Hand-Camera and Lantern Review* prize slides was given. The hall was crowded in every part, and as this society had won the second prize in this competition, a very deep interest was taken in the Liverpool slides which had taken the first prize, as well as their own. Much satisfaction was felt in the fact that they had been beaten by such a society, as it was generally felt that Ashton had come off a very good second. Mr. John Andrew presided, and Mr. C. E. Redfern, J.P., described the views as they were thrown on the screen by Mr. Robert T. Marsland.

Bournemouth.—On 9th ult. a number of prize competition photographs were shown, being kindly lent for the occasion by the Editor of the *Hand Camera and Lantern Review*. Mr. W. Jones, the Hon. Secretary of the section, also gave a practical illustration of the means of enlarging negatives or films with the Cresco-Fylma enlarging solution, a quarter-plate negative being enlarged in a short time to a cabinet size; the simple manner in which it was accomplished was watched with much interest by the members. The Rev. H. Lee showed some curious dry plates, which had been exposed in a hand-camera and which on being developed had turned out as positives. Several members also brought specimens of their summer work, some of which were greatly admired, amongst them being an album of views taken by the President (Rev. J. R. Husband), chiefly on platinotype paper, of Swiss mountain scenery. A lantern evening is being arranged for shortly.

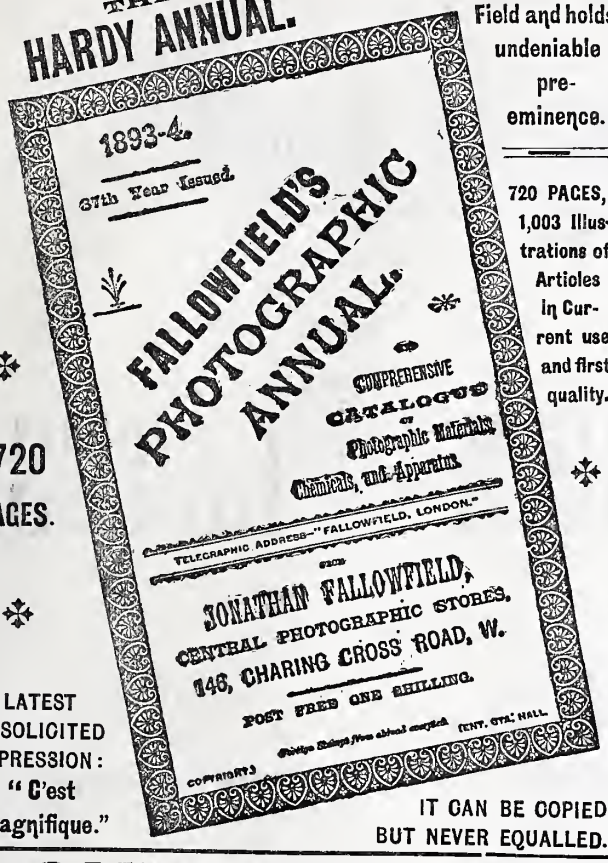
Birmingham.—Ordinary meeting on 21st ult., Mr. W. Jones in the chair. The collection of slides which were recently shown by invitation at the exhibition of the Photographic Society of Great Britain were passed through the lantern. They were representative of the best slide work of the society, and afforded a very pleasant evening to those present.

Birkenhead.—The annual meeting was held on 21st ult., when the following members were elected on the executive for the ensuing year:—President, Thos. Mansell; Vice-President, C. B. Reader; Librarian, J. A. Forrest; Treasurer, A. F. Edwards; Auditors, A. Bradbury and N. S. Nicklin; Council, G. Latimer, G. A. Carruthers, W. T. Briggs, J. H. Welch, W. H. Hunt, D.Mus, F. Hope Jones, G. S. Stansfield, M.D.; Secretary, Charles Male, 28, Grange Mount, Birkenhead. Meetings, the third Tuesday in each month.

Blackheath (St. John's).—Ordinary meeting on 7th ult., Mr. F. J. Simpson in the chair. Nine new members elected. The Chairman called on Mr. M. W. Thompstone to deliver a lecture on "Photographic Printing Processes." The lecturer, in his very interesting lecture, dealt with the methods of working the platinotype, carbon, Obernetter, Nikko, silver, and gelatino-chloride processes, exhibiting several prints done by each process. The growth of photography was traced from the year 1835 to the present day, the latest improvement and most interesting part of the lecture being the development of partially printed prints on printing-out paper. After briefly describing the process, the members were treated to practical illustrations of this new method of printing. Several prints were passed round, the image on some being just visible, the length of exposure being stated as 1-10th of the full printing time. It was very satisfactorily shown that however much under-printed the image might be, it could not be told from a fully printed one after development.

Blackheath (Camera Club).—On 8th ult. Mr. S. Herbert Fry gave

THE HARDY ANNUAL.



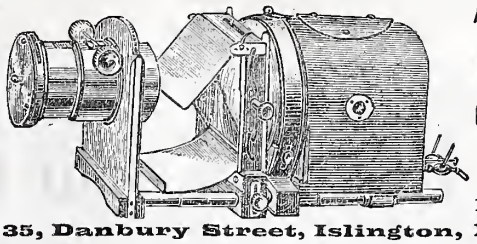
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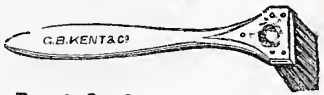
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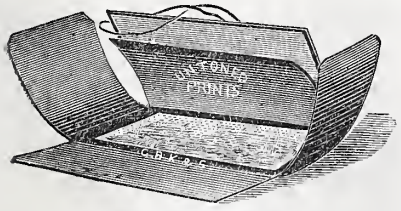
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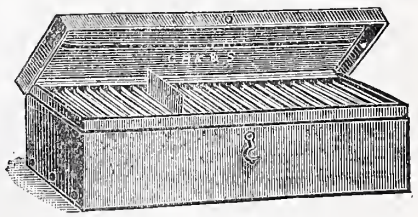


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a demonstration on the Paget Prize print-out lantern plates. He claimed that these plates gave an image that approached as nearly as possible to the character of a stain, and passed round duplicate slides made on bromide and on print-out chloride plates to show the contrast with the granular image of the former. After pointing out the advantages of being able to develop an insufficiently printed image up to the proper density, he proceeded to develop some slides that were much under-printed and afterwards toned these slides and also some duplicates which had been printed right out.

Birmingham.—On 14th ult. Mr. G. F. Lyndon in the chair. In continuance of the series of one-man exhibitions, Mr. J. T. Mousley showed a large number of very fine photographs illustrating his methods of working. The prints, which were mostly of architectural subjects, showed great skill and care in selection, and were of splendid technique. They illustrated many methods of printing, some fine sepia tones on gelatine paper being especially admired. Mr. Mousley also gave some valuable hints as to mounting and framing, some novel frames being laid on the table.

Croydon (Camera Club).—A crowded audience assembled on 15th. Some prize slides were shown. Following the above, the President described and named a number of sets by members of the club.

Croydon Micro.—On 27th Oct. Mr. Sparrow in the chair. Subject, "Mounts and Mounting." As the annual soirée of the club would shortly be held, when there would be an exhibit of the work of members, the opportunity was taken of assisting them in the mounting of their prints. An extensive section of the newest patterns of mounts for exhibition and general use was sent down by Messrs. Adams and Co., and the evening was profitably spent in inspecting and comparing them. A very effective mount—said to be an old pattern of forty years ago now revived—was one consisting of a tinted cut-out mount, the opening being surrounded by narrow strips of the same tint but of a different shade, edged with white or black. Several specimens were shown of the new "slip-in" albums, particularly adapted for glazed prints, as no mounting was required. Mr. Gower showed some mounts tinted by spraying with a comb and toothbrush, a plain centre being left for the print by masking. An example of plate marking on drawing paper produced in a copying press was shown.

Exeter.—A special meeting was held on 10th ult. to hear an address by Mr. Birt Acres on (*a*) "Rambles with a Camera," and (*b*) "Clouds and their Movements." There was a large attendance of members and friends, numbering about 170. The slides, which were the work of Messrs. B. Acres and J. B. Wellington, were, as might be expected, of a very high class, and were most heartily appreciated. Advantage was taken of the presence of Mr. Acres in Exeter to ask him to adjudicate, in connection with a well-known local artist, Mr. Widgery, upon the prints sent in for competition by members of the society. There were four classes, and fifty-nine entries were sent in. A, for the best picture taken during the current season, was easily won by "Mr. Easy;" B, for the best picture taken on one of the society's excursions, was won by "Parrett," "Old Age" coming very closely after; C, for the best moonlight effect, went to "Tavy," who was very closely run by "Laira;" D, for the best print of "animals in motion," was assigned to "Hilarity." On the envelopes being opened the following were found to be the names:—A, "Mr. Easy," Mr. J. W. Huggins; B, "Parrett," Rev. J. Sparshatt; C, "Tavy," Rev. J. Sparshatt; D, "Hilarity," Mr. C. Cole. The exhibits were highly commended by the judges as showing an exceedingly good standard of work all round.

Fairfield.—A meeting was held 10th ult.; the chair was taken by the President, Mr. Mallabar. The subject for the evening's lecture was lantern-slide making, (1) by reduction by daylight, by Mr. H. Holt (who has just won the AMATEUR PHOTOGRAPHER'S Gold Medal for lantern-slides), and (2) by contact and artificial light, by Mallabar. Both demonstrations were very interesting, the results obtained by Mr. Holt being very fine and conclusively showing that reduction gave very much finer results.

Greenock.—On 16th ult. Mr. R. W. Jamieson read a paper on "The Oxy-Hydrogen Lantern, with Safety of the Cylinder," illustrated by a number of gauges, regulators, etc., supplied by the Scotch and Irish Oxygen Company. A prominent feature in the room was a large (100 feet) cylinder, which, when full of gas at a pressure of 1,800 lb. to the square inch, had been bent and crushed by weights of 6½ cwt. dropped upon its centre, the ends being supported on blocks, thus demonstrating the complete immunity from danger of breakage or explosion of these steel cylinders.

Glasgow and West of Scotland.—On 20th ult., Mr. W. J. B. Halley, President, in the chair, Mr. Victor C. Alexander demonstrated printing on "Nikko" paper, and gave his experience as to time of exposure for printing and enlarging. He showed excellent enlargements made on this paper, and finished with a matt-surface. Mr Wm. Goodwin read a paper on "The Factors that Affect Exposures," stating the limits within which these factors may be expected to vary, and showing how tables of exposure are constructed. An exhibition of members' lantern slides terminated the meeting.

Hackney.—On 20th ult., ladies' night, an entertainment was given by Mr. Rennie, entitled "The Forth Bridge," illustrated with lantern slides of a very instructive and scientific nature. The lecturer dwelt upon the subject from an engineering point of view, which was fully explained by the slides which were shown, illustrating the principles. The slides included the building of the bridge at various stages, launching of caissons, etc., etc. A further exhibition of members' slides was given. Members were specially asked to attend a meeting to be held on Tuesday, December 5th, when a discussion upon the society's outings will be brought forward.

Holborn.—Mr. W. E. Debenham gave a most interesting lecture and demonstration on "Wet Plate Collodion," on 17th ult.

Herefordshire.—A meeting was held on 14th ult., when a demonstration was given by Mr. Gus Edwards upon "The Best Methods of Gelatino-Chloride Paper Printing; the Use of Cloud Negatives, and Methods of Printing-in Clouds in Lantern Slides." In opening, the lecturer said that he felt that by the majority of amateur workers very insufficient attention was devoted to printing, and from experience he believed more money was thrown away by careless printing than by all the other branches of photography combined. Taking as example the negatives produced by an ordinary amateur, he roughly divided them into three classes—(1) the flat, over-exposed negative, (2) the hard or chalky, under-exposed, (3) those showing patchiness of lighting or other weak points. Dealing with each class separately, he showed how the defects could be partially or entirely overcome by dodges in printing. The use of cotton wool, coloured glass, tissue paper, stump or crayon, the production and use of masks, etc, were lucidly explained and worked out before the members. The value of clouds and atmosphere in landscape photography was dwelt on exhaustively from an artistic standpoint, and several simple and effective methods were shown of combination cloud printing, reducing contrasts in distance and foreground relief, etc. Demonstrating a very successful and easy way of printing clouds in lantern slides, Mr. Edwards pointed out that the great difficulty usually lay in printing, so that the sky line should not be overlapped, and also in preventing the common halo effect produced by abrupt gradation. These faults were shown by the lecturer to be easily remedied by first making a rather hard slide, painting out the high lights in the picture and using the same as a mask. Slides produced by this method were thrown on the screen and showed some beautiful sky effects, whilst the brilliancy of the landscape was perfectly maintained. Afterwards some novel floral borders suitable for Christmas cards were shown. Mr. J. Parker then explained the importance of varnishing negatives, and showed the way of applying it.

Louth.—On 17th ult. Mr. E. L. Morgan gave an interesting and instructive lecture upon Messrs. Fuerst's new developers, metol, glycin, and amidol. On 20th ult. Mr. S. H. Fry gave a lecture upon lantern slide-making which was specially interesting as so many of the members go in for slide-making At a special meeting of the society it was resolved to hold an exhibition of members' work next February.

Leicester.—On the 9th ult. held a meeting, this being an invitation evening for the members and their friends to a lecture by Capt. Hayes, F.R.V.C.S., on animal photography. This was looked forward to by the members with pleasurable anticipation, as Captain Hayes was a well-known traveller in all parts of the world, and being also an ardent amateur photographer who has made animals in motion his particular study, he was able to present to the meeting pictures on the screen, representing animals in various attitudes, and under such conditions that could not be witnessed at other hands and from other sources; his studies of tigers, leopards, cheetas, and horses in motion, galloping, trotting, leaping, and in repose, were excellent examples of instantaneous photography, his pictures being secured in the 1-50th to the 1-200th of a second. Capt. Hayes accompanied the pictures with a running commentary, showing what points to secure and what to avoid; also exhibiting his twin-lens camera without which arrangement he was of opinion no thoroughly successful shots could be obtained. The lecturer was heartily applauded, his tiger pictures coming in for the greater share, and a vote of thanks, proposed by Mr. Partridge, ex-President, was seconded and carried, to which the Captain suitably replied.

Midlothian.—On 6th ult. it was intimated that the Marquis of Lothian, K.T., had consented to become a patron. The following is a list of the office-bearers: Hon. President, Prof. A. Crum Brown, LL.D., etc.; President, Hugh Marshall, D.Sc.; Vice-Presidents, Alexander Thomson, W. Iveson Macadam, F.R.S.E. Council, Rev. J. T. Burton, James Heay, James Clark, John Purves, C. T. Falconer. Hon. Secretaries and Treasurers, A. D. Guthrie, W. C. Callender. It is intended that the club should acquire a dark-room and studio. Arrangements are at present being made to purchase an enlarging lantern. Papers and demonstrations on various subjects are to be

given during the session. The Secretaries distributed samples of Nikko paper, and the Rocket plates kindly sent by their respective makers, and intimated that members would be expected to report results at next meeting. Applications for membership can be made to either of the Hon. Secretaries, A. D. Guthrie, Bonnington, Edinburgh, and W. C. Callender, Inverleith Gardens, Edinburgh.

Shropshire.—A meeting was held on 14th ult., the President (Mr. F. W. Williams) in the chair. The President proposed, and Mr. Martin J. Harding seconded, "That the invitation to the Photographic Convention of the United Kingdom, to visit Shrewsbury at the earliest opportunity, be renewed." This was carried unanimously. The remainder of the evening was occupied by the exhibition of the AMATEUR PHOTOGRAPHER 1893 Prize Slides; a very pleasant evening was spent.

Southport (Social).—The annual meeting was held on 13th inst., Mr. C. F. Depree (President) in the chair. The Hon. Secretary read the report and balance-sheet, there being a small balance on the right side, and good work had also been done during the year.

SOCIETIES' FIXTURES.

Nov. 30.—OLDHAM—Exhibition of Prize Slides.
,, 30.—WALSALL—Third Members' Exhibition and Award of Prizes.
,, 30.—ASTON—"Practical Enlarging," Mr. G. E. Priddin.
,, 30.—DUBLIN (Camera Club)—"London to Queenstown by the American Mail," Mr. Roche.
,, 30.—LIVERPOOL—"Quiet Corners in France and Italy," Mr. W. P. Christian.
,, 30.—HULL—"Frena Hand-camera," Messrs. Beck and Co.
Nov. 30.—BRADFORD—"Lantern Slide Making," Mr. S. H. Fry.
Dec. 1.—LEWISHAM—"Modern Plate Making," Mr. H. O. Drake.
,, 1.—HOLBORN—"Paget Prize Lantern Slides," Mr. S. H. Fry.
,, 1.—NOTTINGHAM—Exhibition of American Slides (1893).
,, 2.—HOLBORN—Annual Supper at Anderton's Hotel.
,, 4.—WOOLWICH POLYTECHNIC—"Lantern Slide Making," Mr. H. Fry.
,, 4.—RICHMOND—Lantern Evening, *Photography* Prize Slides.
,, 4.—SOUTH LONDON—Demonstration (by request), "Platinotype Printing," Mr. F. W. Edwards.
,, 5.—WEST LONDON—Technical Social Meeting.
,, 5.—HACKNEY—Open Night.
,, 5.—HEREFORDSHIRE—Technical Meeting.
,, 5.—PAISLEY—"A Holiday in Switzerland," Rev. J. Croucb.
,, 5.—FINCHLEY—"Isochromatic Photography."
,, 5.—NEWCASTLE-ON-TYNE—Lantern Manipulation, wiih Exbibition of Novelties and Demonstration.
,, 5.—BRIXTON AND CLAPHAM—Open Lantern Night.
,, 6.—WIDNES—"Chemistry of Photography," A Wareing.
,, 6.—LIVERPOOL—Smoking Concert.
,, 6.—PHOTOGRAPHIC CLUB—"Home-made Dry Plates," Mr. R. Child-Bayley.
,, 6.—CROMWELL—Demonstration in Various Printing Papers.
,, 6.—GREENWICH—Mr. S. H. Fry on "Paget Prize Plate Company's Productions."
,, 7.—LOUGHBOROUGH—Lantern Night, Discussion on Ordinary Work.
,, 7.—LEEDS—Paper, "Beginners' Errors."
,, 8.—HOLBORN—Social Night.

Leigh.—On 9th inst. Mr. Jas. Ward, B.A., presided, there being a capital attendance. Mr. W. Hampson gave a demonstration on toning printing-out papers. Messrs. Leigh, Syms, and Green took part in the discussion afterwards. This society have had a very successful session so far, with great increase in members, and the exhibition in February promises well.

EDITORIAL.

SPECIAL NOTICE.—Letters requiring an answer in this column must be received by the first post on the Tuesday morning prior to publication. The Editor cannot answer letters by post except under exceptional circumstances.

M. MACMILLAM.—Many thanks for print, which is really very good.

H. N. C.—Shall be very glad of prints for our charitable lot.

H. R. H.—It is "too cheap for the money." Try any good maker, like Wray, Taylor, Swift, Watson, Beck, Perken; new or second-hand.

T. GORRELL.—Your letter received. Congratulate you on your success.

F. TURNER.—We answer your letter by post, the private part anyway. (2) With regard to our architectural articles, these will not appear till next year. (3) We do not debar dealers from competing—merely professional photographers. Many dealers are amateurs—very much amateur sometimes.

DONNACHAIDH says: (1) "I purchased an optical lantern lately, and find that when the centre of disc is in focus the edges are out, and *vice versa*. Is there any cure for this?" This is curvature of the field, due probably to the objective. Special lenses are now made with very flat fields on purpose for projection surfaces. It could, of course, be remedied by using a stronger negative element in the back combination, and possibly also this can be improved by separating the two back elements slightly. (2) "What proportion of Nelson No. 1 gelatine should I use to fasten P.O.P. to glass for opalines?" The usual strength is 20 gr. to the ounce, but as the film itself is gelatine, half this strength may be used. (3) "In toning P.O.P. with the official formula, should bicarbonate of soda be added to make alkaline, and if so, how much per ounce?" We prefer to use an alkaline bath, and add three grains of soda to every ounce and ten grains to every grain of chloride of gold before adding to sulphocyanide. (4) "Does the fixing bath require to be alkaline?" Yes, add ½ oz. of bicarbonate to every pint of hypo solution. (5) "Can you tell me of, or give me, formula for a reliable medium for stopping out pinholes in skies, also a good retouching medium?" We always use water colours, mixed up with gum water, so as to match the tint of the deposit; they must be made very thick for retouching. We use a little powdered yellow resin dissolved in turpentine and rubbed on with the finger till dry.

W. J. BOWESMAN.—If you have used No. 1 with satisfactory results, stick to it. It has always given us satisfaction.

SIGNA.—We always take the stamps off, and will look you up a duplicate set of what we get, which as a rule are nothing very special.

R. STEMSON.—We cannot recommend you to do as you suggest. Call at Tylar's, High Street, Aston, and see what he has got.

G. E T.—You are almost certain to get nearly all you want from the following firms: G. W. Wilson and Co., 2, St. Swithin's Street, Aberdeen; York and Son, 67, Lancaster Road, Notting Hill; Perken, Son, and Rayment, Hatton Garden; W. C. Hughes, Kingsland Road. Probably you would get nearly every slide you want by writing to them for American catalogues; many of the slides you mention are catalogued.

BETA.—The next lantern-slide competition closes on December 14th, Portraiture and Figure Study; and all the coupons since November 11 must be sent in with the slides.

H. CROSSLEY.—Many thanks. We use entire, as you see.

R. CHALMERS.—Negative slightly under-exposed in the foreground, and slightly over-printed, and there is a curious line right across the print, which looks as though you had printed in the clouds. We will see what we can do *re* negative, but will not promise.

CROWN.—(1) Both prints show careful, technical work both in making the negative and printing, but the subjects are not artistic, and the toper is not pretty. (2) "Can you give me a formula for mixing retouching paints so that they will not come off in burnishing?" The colours may be mixed with weak gum water or albumen; if the latter they can be just touched when dry with alcohol, and the paint will then be as insoluble as the picture itself, because the albumen is coagulated by alcohol.

J. R. B.—(1) We are not certain, but ordinary 1, extra rapid 2, new 6. (2) Yes, we should say so, most decidedly. (3) "What would be the speed necessary to take skaters coming towards camera, ordinary pace, also racing?" There is not sufficient data to answer your question satisfactorily. We can only give you the necessary formula, and you must work the sums out yourself, or we will if you send focus of lens, distance of object, etc. A skater at ordinary pace travels about six miles an hour or 9 ft. per second, at racing pace about one mile in 3½ min., that is about seventeen miles per hour or 25 ft. per second. The rule to find the speed of shutter is: Divide the distance of object by 100 times the focus of the lens, divide the rapidity of motion of object in inches per second by the result, when you have the longest permissible duration of exposure in fractions of a second. This correspondent kindly states that he finds that pinky tones on chloride paper are not obtainable by weak baths or long toning, but by increasing the quantity of sulphocyanide; for instance, by using 1 gr. gold, 30 sulpho, and 8 oz. water, pink tones are obtained, but by increasing the gold to 2 gr. this pinkiness disappears. We are much obliged for the hint, but surely a bath, when it has been used some time would be in the condition described by our correspondent, namely, weak in gold.

CHAS. COLLETT.—We have received eight prints from you but no letter or communication of any kind. What are we to do with them? Editors are proverbial for knowing everything and being able to do everything, but personally we cannot read thoughts until they are written.

N. O. P.—"What is the best way of mounting prints in optical contact with glass?" Make a solution of gelatine 20 gr. to every ounce of water; whilst still warm immerse the print and glass in the same, allow to soak till print is limp, bring into contact, remove together and squeegee thoroughly, and allow to dry. (2) Yes, hydrokinone will develop Alpha plates.

NORMA.—The citrate of iron developer referred to by Eder on p. 342, is probably Cowan's formula:—

No. 1, for warm tones.

Citric acid	90 gr.
Ammon. carb.	60 ,,
Distilled water, to	1 oz.

No. 2, for extra warm tones.

Citric acid	130 gr.
Amm. carb.	40 ,,
Distilled water	1 oz.

Both effervesce considerably. To make the developer add to 3 parts of either of above 1 part of the following just before using:—

Sulphate of iron	120 gr.
Sulphuric acid	1 drop.
Distilled water, to make	1 oz.

A. V. BAXTER.—The extension of camera will depend solely upon the degree of magnification. There is a market for good subjects, and if you take up a particular line, such as botany, etc., you might get a market. See article this week.

W. A. WORRALL.—The lens for a view-finder should be a double or plano-convex of 1 to 1½ focus. Try Adams, Fallowfield, Park, or Platt and Witte for it.

W. DAVIS.—Use a sheet of ground-glass on the outside of your negative and burn about 24 in. of magnesium ribbon close to the glass, keeping it moving about all the time. Then you need not have a condenser.

R. H. MICHIE.—Article in type, but we are crowded with matter just now.

J. B.—"Am I right in presuming that gelatino-chloride prints can be developed by the Paget Company's process by ordinary naked gaslight?" Yes. "Am anxious to try metol for development of plates, but am deterred by statements as to skin troubles. Is this a general experience?" No, it seems to attack only some people with peculiar skin, and is like intolerance of opium or quinine, merely an individual idiosyncracy. "If I keep sufficient hypo and alum in two separate jars, filled up with water for a certain amount of the salt in each case to be always undissolved, will not the strength of the hypo be 25 per cent. and the alum 5 per cent., or near enough for practical purposes?" The solubility of alum is 1 in 10 of cold water, therefore your solution will be 10 per cent. Hypo is soluble 1 in 1·5, therefore 50 per cent. will be nearer the mark. Where is the difficulty in making definite strength solutions? For instance, why cannot you measure how much water your jars will hold and then divide by 4 to get the necessary weight of hypo to put in, so that when filled with water you will get a 25 per cent. solution; and in the case of alum, divide by 10. This is easy enough and the way we always work.

G. F. B.—(1) Over-printed. (2) Negative hard and spoilt by cutting off cow's feet. (3) Good technically. (4) Negative slightly under-exposed or else printed too deep. (5) Good. (6) Why did not the old man look at his rod? Too evident posing, and there might have been less foreground and more sky. (7) Negative under-exposed and hard.

A SUBSCRIBER.—(1) "Will hypo solution after being used once for Ilford P.O.P., do for fixing plates if made stronger?" Yes, so far as we know there is no objection to fixing plates in a print fixing bath, provided it is strengthened and not used too long. (2) Alum 3 oz. to pint will not dissolve properly, but settles to the bottom. The solubility of alum is 9·5 in 100 or practically 1 in 10, therefore 2 oz. only can be

dissolved in a pint of cold water, and if dissolved by heat some is boundto separate out.

W. HEATH.—Don't cry out before yon ars hurt, please; ths rsport was mersly held ovsr because ws had not room. Thanks for your criticism; we are always glad to receive criticism, evsn though it may bs givsn in a little had taste. You evidently believs in the old biblical saying, that if thins snemy smites thes on the ons chesk turn to him the other; this is, no douht, good, but an Englishman sometimes has an intenss longing to hit back, and does it somstimes too.

H. DEAN asks, whars can baryta peper as ussd for gelatino-chlorids paper bs obtained? Probably Percy Lund and Co., Memorial Hall, Ludgate Hill, E.C., or Hinton and Co., Bedford Strset, Strand, will supply. He also asks will Dr. Eder's hook hs published when complste. Most probably; that is, at least, our pressnt intention.

WALTER E. WOODBURY.—If you wish to send us lettsrs, kindly prepay the postags. The last but one ws had from you, we had to pay excess postags for, and one was also offered last week for which the post man demanded thrsspence hecause it was insufficiently stempsd. We rsfused to pay, and therefore the lattsr will probably he retnrned to yon, as, judging from past communications, we do not consider your letters worth threepence.

J. N. D.—The 12 in. would be the better lens for your purpose.

M. D. asks, *re* Welford's toning hath, (1) "Is it necsssary to ovsr-print to anv great extent?" No. Thsrs is not much loss in detail in toning and fixing. (2) "Is washing required bsfore toning, or are prints placed direct in the hath withont washing?" It is advisable to wash the prints thoroughly before toning, so as to remove all the fres silver and free acid, or else tening is prolonged and there is loss of detail.

OUTIS has been trying the Paget Co.'s process and has got some very red prints and wants to know why. A combined bath was used, with one grain of gold for sevsn quarter-plate prints. The red tone is simply due to toning not being carried far enongh, hut as the prints remained in the bath for fifty minutes we can only assume that the toning hath was wrong in some way. We do not know the formula used, but it might happen that if the bath was allowed to stand and then filtered, the gold had either hsen precipitated or else heen converted into a stable form which would not tone. "About how many quarter-plate prints will one grain of gold tone?" A good deal depends upon the character of the print, but about ten is a safe number. "In the event of the bath being acid, would bicarhonate of soda be the best thing to neutralise it with, as I gather from your remarks to 'Combined Bath' last week, chalk is unsuitable?" Thie is jumping, however, to false conclusion; we did not mean to infer this merely to the combination all together] of chalk, lead, and hypo. If a combined bath of gold, chalk, and hypo is made up, we should say it would be as good a hath as could he used. (2) "Please give some hints about metol cartridges and metol generally." Dissolve the contents in 7½ oz. of water for ordinary work; time exposures nse 1 oz. of this with 3½ oz. of water and a few drops of tsn per cent. solution of glacial acetic acid as a restrainer. For instantaneoue work use the stock solution as it is, without any additien. Metol gives the best results when used in a two-solution developer with carbonate of potash. Increase of metol gives increase of density, increase of potash accelerates, more water gives greater softness. (3) "In working Cresco-fylma I find the film enlarges to an unmanageable extent; can this be avoided?" Yes, the less water mixed with the solution, the less the expansion.

C. E. F.—We are sorry we cannot let the discussion go any further now. A negative should always be varnished all over, but when retouching is done, then only that particular place need he touched with varnish.

W. E. C. WHITE.—The entry form printed last week is all that will be requirsd, thongh we may print another, still that will not matter. No, the judgee will not care whether the prints are reductions, enlargements, or direct. Views of churches, as you suggest, are admissible. Practically you may say that any photograph not a figure study or portrait taken on a holiday, no matter what holiday, is admissible. We should say that Cambridge was most decidedly not your home.

PROJECTION.—The only thing yon can do is to write to Swift, Tottenham Court Road, or Taylor, Taylor and Hobson. Slate Street, Leicester, and ask them to help yon. You will not get what you want at any low price.

PAUL NINNIS.—We will write you by post.

E. A. PARRY.—Many thanks. We are making enqniries into the matter.

R. STEELE.—Please send all reports, etc., to the Editor, not to the publishers.

R. S. COCKS aske whether gummed canary paper backing will answer for isochromatic plates, and if it is necessary to moisten the whole of the gum, or if sticking the edges down only will do. We should say that this would be almost nseless, because the plate would be sensitive to any light which was reflected from the paper. Further than that, any backing mnst be in optical contact all over to be of any use, otherwise the gnmmed surface of paper would be worse than nothing. A good hacking is Powell's caramel and sienna, which can bs applied with a roller sqnsegse, and then the plate merely laid down on a shsst of plain or rsd or yellow papsr cut to sizs and put direct into the dark-side. With rsgard to lamp possibly Lancastsr's Gas Ruhralux lamp would suit you. Writs them for list.

A. J. SHAW.—(1) Far too weak, over-exposed, and a mors concentrated daveloper shonld have bssn used. (2) Camsra was not straight, and slide a little too weak.

W. H. B.—(1) Far too much foregronnd, and the abbsy shonld have been takan by itself so as to fill all the plate; negative weak, or else printed in too strong a light. (2) Ovsr-printed or negative wsak. (3) Ditto. (4) This is slightly better, bnt not much. (5) This is better still. You are not carrying devslopment far enongh. Ths prints are a good tone, but flat and heavy looking. Let us see a negative or two if you can.

ARCANUM.—Much obliged for your kindly letter. We will see what ws can do for yon.

AMATEUR.—(1) We believe the print to he on alhumenised paper; (2) and is backed with ordinary paper; (3) and is from a wet-plats negative. Possibly the tone could hs obtained with ths ordinary acstate bath, but more dspends on negative than bath. (4) It is enamelled with collodion.

COPYER asks whethsr "ordinary and rapid plates are suitahls for copying portraits, or whether it is necssary to use photo-mechanical plates. Is day, gas, or magnesium light the best, and what are the comparativs exposures; also what proportions of pyro and ammonia would you recommend." In copying a portrait (ws presume a photograph is msant) it is essantial to obtain as much half-tone as possible, hence rapid plates should be used and a fnll exposure given. Sunlight would bs the best light, but failing thie, then magnesium. It is impossible to give the relative exposures, becanse they will vary enormously with the gas-burner used, the daylight, etc., but using magnesium ribbon, an R.R. working at *f*/16, and a rapid plate, twelve inches burnt on each side of the print would be plsnty. In developing, keep down the pyro and use normal bromide and ammonia. Soft, delicate negatives rather are to be aimed at.

G. BATES wishes to gain his living or help his income hy taking photos, and reqnires a better lene than the one he hes, and wants one that will do all thres things, portraits, groups, and views, and we have no hesitation in saying that he will have to pay a heavy price. The hest lens would be one of the Eurysscope type, snch as Perken, Son, and Rayment's Eurysscope working *f*/6, or Watson's Premier at *f*/5·6, or Swift's Paragon portrait *f*/4, or Taylor's rapid portrait.

IGNORAMUS asks whether he can use the Ilford pyro stock solution with ammonia and bromide instead of soda. If so, should it be made up to a 10 psr cent. solution and nsed with ammonia and bromide of same strength? Certainly; hefore the soda developer was recommended, ammonia was used as the accelerator, and the following were the directions:—

No. 1. Stock solution.

Pyro..	1 oz.
Ammonium bromide	600 gr.

Make up to 6 oz. with water. When dissolved add exactly 20 drops of pure nitric acid.

No. 2.

Liq. ammonia (·880)	3 dram.
Water	1 pint.

No. 3.

No. 1	1 oz.
Water	19 ,,

For developing mix solutions 2 and 3 in equal proportions just before use. This is equal to a strength of 1·85 gr. pyro, 2·5 gr. bromide, 4·5 minims ammonia per ounce, so that if the solntions are made up from 10 per cent. isolution of pyro, bromide, and ammonia, the composition of the developer will bs

10 per cent. pyro solution.. ..	19 minims.
10 ,, ,, bromide solution ..	25 ,,
10 ,, ,, ammonia solution ..	45 ,,
Water, to	1 oz.

It must he noted that the makers state that for Ilford iso. plates ammonia should not be nsed under any circumstances, and that the soda developer is snitable for all their negative plates, and yisldg, nndoubtedly, the finest possible results, therefore, unless you have some strong and special reason for giving up soda, we should say, stick to it.

ZINCOPE.—(1) Unless you particularly wanted to show the horses large, it was a pity to cut the plough off, and why did you not make the man walk hy the side of the horses and lean forward and get the whole on the go, so as to give the idea of a stiff pull up-hill? (2) We object to the relative sizes of the man and the boy—this is due to the short focus of yonr lens. (3) Batter, most decidedly, but why didn't you now make the man stand and scratch hie head as though chatting to the boy? (4) Not improved by the figure, and it would have been batter, we think, to have taken the bridge at a more acnte angle. (5) Hsre again the distortion of perspeotive is apparent, otharwise it is good, the distance is charming. Why do you always stop the plough, why not do a little snap-shot work and get life and go in the things? The atmosphere and distance is exceptionally good, but they are too stiff and posed.

W. H. R. BRUSH.—Your prints ars not to hand at the time of our closing for prass, and thsrefors they must wait for next wesk's issue. (2) "What kind of paper is used, so as to show a white margin when mounting prints, as opalines on glasss larger than the photos?" Too often the-white margins of opalines are due to whitswash laid on ths glass first, but any white papsr may he cut to shape and pasted to glass. If you want to do it on the papsr you print on, it will be nscessary of course to print on a largsr sheet, and uss an opaque mask. Rather thin, about 17 lb. white dsmy is gensrally used for ths borders, though. (3) "In ths rules for Optimus 100 gs. '93 Competition it says with each print must bs enclosed an envelops hsaring nom de plume, and insids entry form, etc., etc. Doss this msan that if six prints are sent in, six sntry forms and six envslopss ars to hs sent in?" Yes, ws believe so, most certainly.

A. HERNE wishes to know how to prepire farric oxalate. "Some time since, on adding oxalate of potash to sulphate of iron, a rsd precipitate was thrown down; was that farric oxalats?" No, when adding oxalats to sulphate of iron, ferrous oxalate is formed and prsciptated because it is not soluble or only faintly so in water, and there was not enongh excess of alkalins oxalate to dissolve it. To make farric oxalate, the best method is as follows:—In a large heakar mix half a drachm of strong sulphuric acid with an ounce of water, and heat to boiling point, add 556 gr. of farrous sulphate, add nitric acid in quantities of 10 drops at a time till ths solution ceases to give a precipitate with potassium ferrocyanide, add sufficient liq. ammonia to precipitate the whole of ths iron, allow ths precipitate to settle, dscant and wash till frss from acid. Then mix with 378 gr. of oxalic acid dissolvsd in 3 oz. of water, when a solution will be obtained containing 376 gr. of ferric oxalate. For platinotype work the solution should contain 100 gr. of ferric oxalate per oz.

YE EIFLS has two portrait lenses of French make which have foci of 4 and 7½ in. respectively. "Can thsy be used for lantern objectives, or can one of the combinations be nsed on a half-plate camera?" Both lenses can he usad as lantern objectivas. The shorter focus will, of course, give a larger image, practically ahout double the size of the longer, from the same point. The front combination may be used as a single lens for the half-plate camera, either by leaving it in position and inserting stops bshind it, or by screwing it into the place of the back combination, when the stops, of course, will he in front. This correspondent sends a sketch of the lenses in his portrait lenses, from which it is evident that the back combination is misplaced. In all portrait lenses of the Petzval type the negative lens is inside, that is, next to the stop; than comes the separating ring, and then the convex glass with its more curved surface towards the negative lens. (2) Yes, you would find the 5 in. lens very suitable and a capital instrument. Shall be glad to see prints, and trust yon will still keep the fever for a long time and have it worse still.

C. H.—The only fault to find is that the negative is slightly over-exposed and print consequently a little flat. There is nothing to prevent your sending it in to the competition, but we may add that artistic merit will be spscially looked for.

EXON.—We must write you by post.

M. J. WOODSIDE.—(1) "Are Ilford ordinary plates suitable for frost and snow scenss, and do they require backing? If so, what is the most suitable?" The platee are quite snitable, but, personally, we should prefer the Ilford medium isochromatic plates for this purpose, as giving, we think, a better rendering of white detail than any ordinary plates. It is not necessary to back them, but at ths same timo it will be found an advantage, and Powell's caramel and sienna backing is the best. This can be applied with a roller squesgee or flat brush, and the plate immediately laid down on paper cut to size and put in the dark slide. (2) "Should a small stop be used for snow pictures? What ie the best size and general exposure to give?" Mrs. Main, who has taken more medals for snow pictures than anyone else, probably says that early in the morning and late in the afternoon is the best time, and with the sun shining she finds an exposure of two seconds with *f*/64 and a slow plate about right; bnt this ie for Switzerland, probably double as much wonld be required in England. You will find ehort but instructive article on this subject by her in our iesue for August 25th, 1893.

ALPHA has an R.R. the foci of the combinations f which are different, and wants to know which combination should be towards the bromide paper in enlarging. It is a matter of perfect indifference which way the lens is turned. When squeegeeing prints to glass and monnting them whilst on the glass it is very difficult to strip them without banding the mount. This is all that can be expected, and we do not see how it is to be avoided unless the glass, print, and moun are placed in front of the fire and allowed to strip themselves, which wonld not bend the card so much. "Which side of watsrproof backing paper should be placed next the print?" It is usnal to place the white side next the print, though we are aware of some operatore who use it the reverse way. You may be quite certain that the alteration was an improvement or else it would not have been made. Still, if you can use the old bath with good results by all means stick to it.

Sale and Exchange.

RULES.

CHARGE.—*Twelve words or less for Fourpence. Every additional three words, one penny. The name and address of the sender must be paid for. (A single figure, or group of figures undivided by letter, space, stop, or words, counts as one word: compound words count as two words.)*

DEPOSITS.—*Money for goods forwarded on approval may be deposited with the Publishers of the* AMATEUR PHOTOGRAPHER, *who will hold the amounts deposited until they are satisfied that the transaction has been completed to the satisfaction of buyer and seller.*

ADDRESS.—*All advertisements (which can be received up to Tuesday mid-day) and other communications having reference to the Sale and Exchange column, must be addressed "Sale and Exchange,* AMATEUR PHOTOGRAPHER, 1, *Creed Lane, London, E.C."*

REPORTING.—*Apparatus may be sent to the* EDITOR, AMATEUR PHOTOGRAPHER, 1, *Creed Lane, London, E.C., who will report upon the apparatus to the buyer for a minimum fee of 2s. 6d., or a commission of 2½ per cent., upon the sale price of the apparatus.*

COMMISSION.—*A charge of 2½ per cent. will be deducted from all deposits whether a sale is effected or not. Minimum charge* 1s.

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PAYMENTS *should be made in Postal Orders or Postage Stamps.*

Backgrounds.—Garden scene, ships' deck, interiors, village scene, etc., on canvas, flatted oils, 8 by 6, 12s. 6d. each, new. Photographs two stamps.—William Hare, Sutton, Surrey.

Burner.—Self-lighting burner, invaluable for dark-room, carriage free, 3s.—W. Bernard, 131, Shepherdess Walk, N.

Burnisher, etc.—For sale, 6½ in. burnisher, as new, 7s. 6d., perfect condition; also one dozen quarter-plate metal sheaths, new, 2s. 3d.—W. N., 4, The Bayle, Folkestone.

Cameras, etc.—Lancaster's 12 by 10 Multum in Parvo enlarging and reducing camera, cost 30s.; Griffiths hand-camera, cost 21s.; Lancaster's half-plate outfit, cost £5. Offers wanted.—Cave, Chemist, Southport.

Enlarging Apparatus, etc —Lancaster's 15 by 12 enlarging camera, nearly new, 30s.—B. Mansell, 24, Bilston Street, Wolverhampton.

Hand-cameras, etc.—Kodak No. 2, almost unused, new and perfect, complete with leather travelling case, and some unused film, cost £7, price £4.—Box 1, Mallow.

Adams' Ideal, fitted Wray lens, rotating stops, time and instantaneous shutter, carries eighteen quarter-plates, two finders, finest condition, £6 15s.—City Sale and Exchange, 54, Lime Street, corner Leadenhall Street, City.

Adams' 1894 camera, with extra changing box, and Ross lens, cost £18 nett, quite recently, only used a few times, for £12 10s.; also Frena, in good condition, for £3.—H. O., 57, Upper Sackville Street, Dublin.

Lamps.—Two of Stock's patent lamps, used only six times, regulation size to fit any lantern made for oil, price 17s. each.—F. T. Carter, 46, Fortis Green Road, East Finchley.

Lantern, etc.—Perken's japanned optical lantern, complete with double carrier in deal box.—No. 452, office of this paper, 1, Creed Lane, Ludgate Hill, E.C.

Lantern Apparatus.—Pair gas bags, equal to new, cost £9; pair skeleton pressure boards, nearly new, cost £4, take 55s. for lot; combination jet, Steward's, blow-through or mixed gas, cost 30s., take 14s.—Mytton Hall, Shrewsbury.

Lantern Plates. — Twenty-seven packets Fry's lantern plates, exchange for quarter-plate Instantograph or offers.—Birkbeck, Bailgate, Lincoln.

Lantern Slides.—One or two dozen slides of Lincoln Cathedral, in exchange for other slides of equal merit. Send specimen to—Birkbeck, Chemist, Bailgate, Lincoln.

Lantern Slides. A large number for sale cheap, or exchange others.—Box 1, Mallow.

Lenses, etc.—Dallmeyer's carte de visite lens, gives beautifully sharp definition, 30s.—"Antameur," 9, Algarve Road, Earlsfield.

Splendid half-plate rapid rectilinear, covers well, stops in case, 19s. 6d.—Wickes, Watchmaker, Merton, Surrey.

Lancaster's quarter-plate lens, exchange copying lens; Stock lamp, 10s, ditto, 2s.—Veritas, 1, Arthur Villas, Kent Road, Gravesend.

Ross No. 6 portable symmetrical lens, 8 in., new, cash, 75s.—137, Westgate, Gloucester.

Retouching Medium. — Simplex retouching medium, genuine and reliable, bottle, with written instructions how to retouch, post free, nine stamps, none better.—William J. Hare, Sutton, Surrey.

Sets.—Ross R.S. 10 by 8 lens, Wollaston shutter to fit same, Rayment's 9 by 12 centimetres camera, reversible frame four double backs, fitted with Euryscope lens (5 by 4), and Sands and Hunter's patent shutter, canvas case, velveteen focussing cloth, ash tripod; Rouch's Eureka hand-camera 9 by 12 centimetres, fits above lens, leather case.—No. 452, office of this paper, 1, Creed Lane, Ludgate Hill, E.C.

Half-plate Spanish mahogany camera, by Mason and Son, double extension, leather bellows, rising front, swing and reversing back, R.R. lens by Banz, Waterhouse stops, double book-form slide, folding stand, £4 5s.—City Sale and Exchange, 54, Lime Street, corner Leadenhall Street, City.

London Stereoscopic Co. Twin Lens Artist hand-camera, fitted Black Band rectilinear lenses, Waterhouse stops, works *f*/6, time and instantaneous shutter, full size finders, six double dark slides, complete, in solid leather case, in best condition, £9 9s.—City Sale and Exchange, 54, Lime Street, corner Leadenhall Street, City.

Watson's half-plate camera, lens, and tripod, one double back, a bargain, £6 10s.—Lee, 8, Ellis Terrace, Nottingham.

Stereo. Slides.—Stereoscopic slides, special offer, fifty for 5s., or twelve for 1s. 6d., post paid, by return.—F. Mann, 48, Elgin Avenue, London.

Sundries.—Twelve wood boxes for storing negatives, each holding sixty quarter-plates, 12s.; twelve ditto, holding sixty half-plates, 16s.; twelve ditto, holding fifty lantern slides, 16s.; all bargains, cash only.—Thompson, Photographer, 72, Market Street, Bradford.

Amateur photography. Comfortable home offered to a gentleman, in a quiet private house, where taste for above can be indulged; terms moderate, references required.—Address, A. B., 43, Dewhurst Road, Brook Green, near Addison Road Station.

Tripod.—Tripod stand, folds in three, rigid, price 3s. 6d. post free.—Dunsmore, 21, Moir Street, Glasgow.

WANTED.

Cameras, etc.—Wanted, 10 by 8 camera, exchange valuable pictures (good).—12, Nelson Street, Broughton, Manchester.

Sundries.—Wanted, offers for vols. 1 to 10 bound, 11 to 15 unbound, AMATEUR PHOTOGRAPHER; also other photographic books.—Evershed, Penzance, Cornwall.

PERSONAL.

NOTICE is hereby given to all whom it may concern, that my connection with Messrs. Percy Lund and Co ceased, by mutual consent, on Nov. 11, 1893. My connection with photographic and general journalism will be continued, and I have taken a large and convenient office in the Memorial Hall, Ludgate Circus, London, E.C. Correspondents will oblige by addressing all communications to me, personally, at this address.—H. SNOWDEN WARD.

Bijou Enlarging Lanterns.—Finest results with Hughes's patent rectangular condensers, half the size of ordinary make, superior definition, proper diffusion of light, scientifically constructed, not commercial; several whole and half plate for sale, cheap.

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SECOND-HAND CAMERAS AND LENSES, etc. The best place to buy Second-hand Photographic Apparatus is SANDS, HUNTER, & CO., 20, Cranbourn Street, Leicester Square, London, W.C.; who only deal in reliable and best quality apparatus. Approval allowed on all goods, with deposit. Cameras and Lenses, by good makers, bought for cash or exchanged, also let out on hire. Send for Catalogue, gratis and post-free. *Please quote this Advertisement*

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Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 479. Vol. XVIII.] FRIDAY, DECEMBER 8, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

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EDITORIAL DEPARTMENT.—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received by the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed each week in the paper, and competitors must send in all the forms with their lantern slides.

We shall be glad to hear from any of our readers who have had unsatisfactory dealings with the "Uno" Camera Company, late of 46, Southampton Buildings, W.C.

We promised our readers to give them a print competition for this month, and we have fixed upon "Autumn" as the subject, and December 30th as the latest date for sending in prints. Entry forms for this will be printed in a forthcoming issue of the paper.

The subject "Autumn" is one which lends itself to illustration well, and as we do not place any limits beyond this, we hope to see a good muster of prints. Autumn may, of course, include leafless trees, or trees with autumnal foliage; and river scenes, as well as landscapes, are admissible.

The following is a complete list of the Judges at the forthcoming Bristol Exhibition: Messrs. Bernard Alfieri, Valentine Blanchard, S. P. Jackson, Payne Jennings, and H. A. Hood Daniel, the President of the Bristol and West of England Amateur Photographic Association.

The Secretary of the above also informs us that the latest date for receiving exhibits has been extended to December 8th, this being in response to a number of applications from would-be exhibitors.

We publish in our correspondence columns a letter from Mr. F. E. Ives on the subject of three-colour typographic printing, which will be of interest to our readers. As announced last week, we shall have a little more to say on this subject presently, for though we fully recognise the difficulties pointed out by Mr. Ives we are in hopes that some at least of them may be overcome. The rumour which Mr. Ives denies was taken from an American journal.

The Photo Club de Paris has decided to hold an exhibition, "essentiellement artistique," from the 10th to 30th of January, 1894, and we hear that a small but representative collection of the works of some of our leading workers is to be sent off. Messrs. H. P. and Ralph Robinson, Horsley Hinton, Calland, Gale, Briant, Alfieri, Annan, Davis, Cohen, Greger, Crooke, Hollyer, Burchett, etc., are said to be the exhibitors.

The article of the regulations, "Le but de l'Exposition est essentiellement artistique," points to its being another Salon. This style of exhibition is evidently in great favour just now, for we hear rumours of a provincial Salon being projected.

WE have heard before now of the wail of the professional at the decay of business, and the damage which amateurs do, and the following clipping from a weekly journal is another instance, if true, of how the shamateur does it :

"A WRINKLE FOR SCHOOL TEACHERS.

"Oh, I make a good addition to my income by taking photographs of my pupils in groups," said a school teacher recently.

"I bought a camera solely for amusement at first, but one day I had a fancy for taking the school, and with the head master's permission I took a photo of all the scholars in the playground. I developed the plate and the picture came out well. Being naturally a trifle proud of the first group I had taken, I printed a few copies and showed them to some of the boys. I suppose they went home and told their parents 'teacher had taken their likeness'; at any rate, several boys brought notes asking how much the photos were each.

"I charged sixpence each, and from that one negative I printed and sold over eighty copies. Since then I have invariably taken the school every six months, never on any occasion failing to sell at least twenty copies. Besides this, I occasionally go to other schools for the same purpose, so that my camera, instead of ouly affording me amusement, brings me in several pounds a year which I should not otherwise have obtained."

IT is curious, as pointed out to us the other day, that as far back as twenty-five years ago there was the same old cry, the same old wail about the decay of business, and the same old dispute about art in photography. Verily there is nothing new under the sun.

THE *Pall Mall Gazette* has had quite a long article on "The Art of being Photographed," which is a dissertation over an album, between an uncle—we hope not the Lombardian relative—and a nephew, in which there are a few amusing, though not new things.

"Why, for instance, do men brush their hair so excessively when they go before the lens? Your cousin here looks like a cheap chess pawn about the head, whereas as I know him his head is a thing like a worn-out paint-brush. Where but in a photograph would you see a parting so straight as this? It is unnatural. You flatten down all a man's character; for nothing shows that more than the feathers and drakes' tail, the artful artlessness, or revolutionary tumult of his hair."

Here is a hint for our fair readers:

"What horrible things hands become in a photograph! I wonder how it is that the hand in a photograph is always four shades darker than the arm. Every girl who goes to be photographed in evening dress should be solemnly warned to keep her hands out of the picture. They will look as though she has been enamelling the grate, or toying with a bucket of pitch. There is something that sins against my conception of womanly purity in those dark hands."

HERE is a suggestion which may possibly lead to something. We only wait now for "some clever woman:" "Yes, it is a neglected field of education, an important branch of deportment altogether forgotten. Our well-bred ease fails us before the camera; we are lucky if we merely look stiff and self-conscious. I should fancy there should be an opening for some clever woman to teach people how to dress for the occasion and how to sit, what to avoid, and how to avoid it. As it is, we go in a state of nervous agitation, obsequiously costumed; our last vestige of self-assertion vanishes before the unwinking Cyclops eye of the instrument, and we cower at the mercy of the thing and its attendant. They make what they will of us, and the retoucher simply edits the review with an eye to the market. So history is falsified before our faces, and we prepare a lie for our grandchildren. We fail to stamp our individualities upon our photographs, and are mere 'dumb-driven cattle' in the matter. We sin against ourselves in this neglect, and act against the spirit of the age. Sooner or later this haphazard treatment of posterity must come to an end."

Flotsam and Jetsam.

Is there an amateur anywhere within ten miles of Wanstead Park who has not photographed its famous falling tree, or an editor who has not received innumerable prints of it in prize competitions? The tree has ceased to pose. In a recent gale it snapped right off, and is now the fallen tree, shorn of all its former glory.

So there is a chance, after all, of finding Scott, the missing link in the Ardlamont case. All through a photograph, of course. A print of a group in which he appeared has been discovered, and the authorities are following up this clue with energy. The moral for the criminal *in posse* is, evidently, never to face the camera.

THE fascinating lectures on "Astronomy" which Sir Robert Ball is giving here and there about the country, to the unbounded delight of all who hear him, would be quite impossible were it not for the help rendered to him and to all astronomers by the faithful camera. To do him justice, Sir Robert always acknowledges this in the most handsome way.

HE speaks enthusiastically of the alliance that has been formed between photography and astronomy, and, not content with illustrating this by his marvellous photographs of the heavens, he goes out of his way to show the powers of the camera by exhibiting a photograph of an electric spark, in which the exposure given was only one-ten-millionth of a second!

AND then, by way of contrast, he exhibits a plate on which minute waves of light, imperceptible to human vision, and even to the worker with the telescope, have silently beat, and, in a period of seven hours, have impressed the image, a mere point of light, of a star plunged some million of millions miles deep in space.

IF the man who only blew hot and cold with the same mouth was condemned as a sorcerer, what would they of his time have thought of instruments that could both catch an electric spark in the ten-millionth part of a second, and draw from a star a million of millions miles away an image of itself?

INSTEAD of a string of noughts following after a numeral which too many lecturers employ when speaking of these far-distant stars, Sir Robert Ball uses a graphic illustration which is perfectly simple and perfectly easy to remember. It may be of use too, and is certainly worth reproduction.

GOING at the rate of the electric telegraph, that is, at the rate of 186,000 miles a second, it would have taken from the time of the battle of Waterloo till now, a period of seventy-eight years, for a telegraphic message, announcing the result of the battle, sent from the earth, to have reached the most distant of the telescopic stars.

BUT beyond these telescopic stars are the invisible stars, which only the camera can see. And if to these a telegraphic message had been sent at the rate of 186,000 miles a second, 1893 years ago, announcing the birth of Christ, the message would only just have reached them.

Is not Sir Robert's method admirable? Of the capacity of the camera to see different kinds of light to that visible to the human eye, more another time. ANCHORITE.

The Month.

Brightness of Reflected and Transmitted Light with various Substances.

A communication from the photo-chemical laboratory, Berlin :—The estimation of brightness was effected with a Bunsen grease-spot photometer. The following numbers are the mean of several experiments. The strength of the original light is taken as the unit 1 :—

Photographic raw paper (8Kg)	0·200	Strength of transmitted light.
Thin copper-plate paper	0·158	
Coarse ground-glass	0·160	
Fine „ „	0·875	

Paper screens of 12 in. square wore placed as reflectors at a distance of 18 in. from the photometer screen P, and illuminated by a lamp L 6 in. distant, RR being an opaque screen

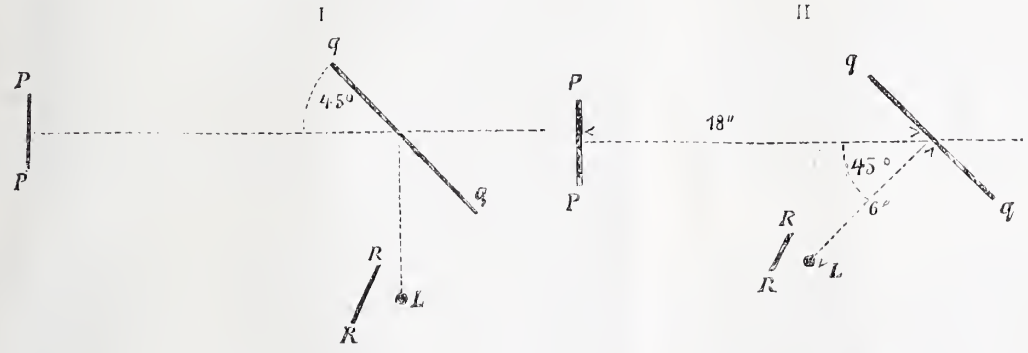


Fig. 1.

to keep light from photometer. The two positions as shown in figs. 1 and 2 were tried. The brightness of the petroleum lamp at a distance of 24 in., without the screen qq, was taken as unit.

The brightness of the screen qq in position 1 = 0·4.
„ „ „ „ „ 2 = 0·2.

When the lamps were 6 and 12 in. respectively from the screen, the brightness was not as 1 : 4, but as 1 : 3·25. A cylindrical paper screen of 6 in. radius shows, when a light is

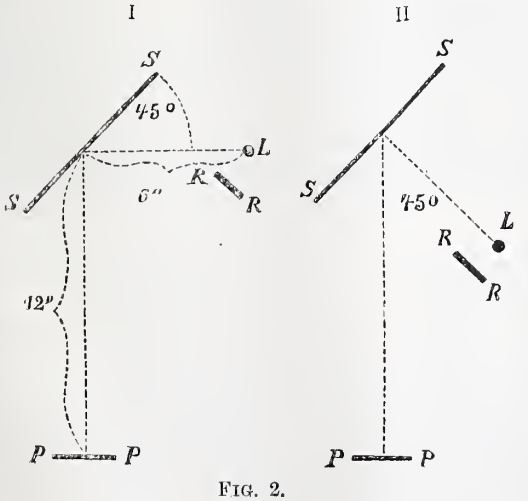


Fig. 2.

placed at its centre, a brightness = 1, when the light was covered with a small black screen a brightness 1·08.

A mirror SS, fig. 2, 12 in. square, was placed at a distance of 12 in. from the photometer at an angle of 45°, as shown in figure, and lighted with a lamp, 6 in. distant in the two positions I. and II., the brightness of the light at 18 in. distant = 1, then the brightness of the reflected rays in position I. = 0·85, and in position II. = 0·55.—*Photo. Mittheil.*, Nov. 1, p. 226.

Grain in Negatives.

M. Gife presented a report at a recent meeting of the Association Belge, which was the result of a commission of inquiry on above subject. A plate was exposed, cut into strips, and developed with ferrous oxalate, pyro, hydroquinone, and amidol. After fixation, washing, and drying, the strips were examined under a microscope by the members of the commission, and they were unanimous in the verdict that the size of the grain was not altered with the developer, but that it depended solely upon the ripening of the emulsion. Gelatino-chloride plates have a much finer and more regular grain than bromide plates, wet collodion plates having an extraordinary fineness and a complete absence of grain.—*Bull. Assoc. Belge. Photo.*, Nov., p. 631.

Collodio Chloride Paper.

Lainer considers the conditions which have to be observed to attain keeping power, etc., of the above. *Anthony's Bulletin* suggested bathing the baryta paper support before coating in—

Hydrochloric acid ...	2 parts.
Citric acid	2 „
Tartaric acid	2 „
Water	100 „

Lainer has tried this and found it useless, as the baryta paper loses its surface, and is only coated with difficulty. From numerous experiments, he concludes that the keeping power of the paper depends: (1) On the quality of the baryta paper, or the composition of the baryta emulsion; (2) on the method of preparation of the collodio-chloride emulsion and the chemicals used; (3) on behaviour during the preparation of the baryta paper with the emulsion; (4) on the keeping of the collodion paper. If conditions 1, 2 and 3 are observed, the paper will keep a long time without trouble. If the sheets are placed with the film side in contact, and about two dozen enclosed in good white filter paper, and then in opaque paper, they will keep for a long time, because the paper itself is not in contact with the collodion film, rich in excess of silver. Many collodion papers show in a few weeks a rose-red discolouration on the back caused by the free silver nitrate, which has penetrated through the baryta film. To prevent this, blotting paper soaked in the following solution should be placed in between :—

Water	1,000 parts.
Salt	20 „
Tartaric acid	10 „
Glycerine	10 „

The tartaric acid should be partly neutralised with soda.—*Photo. Corresp.*, Nov., p. 530.

The Action of Boric Acid on the Combined Bath.

Valenta, commenting on Gaedicke's addition of boric acid to the combined bath, and statement that sulphur was not precipitated, states that boric acid slowly precipitates sulphur from decomposition of the hypo, which combines with the lead nitrate and forms lead sulphide. Gaedicke stated that his bath gave beautiful purple tones with great ease, and Valenta points out that this is due to sulphur toning in combination with gold toning.—*Photo. Corresp.*, Nov., p. 529.

ON THE USE OF ZINC FOR RECOVERING RESIDUES.

Dr. Stiebel read a paper on above subject before the Verein der Phot., Frankfurt. Zinc in the form of powder is best used in a neutral or faintly alkaline solution. If there is much acid present it should be neutralised, although the solutions may be faintly acid. Stiebel found that zinc precipitated 98·84 per cent. of silver and 98·97 of the gold from a fixing bath.—*Photo. Corresp.*, Nov., p. 547.

MATTOLEIN.

The formula for this retouching and matt varnish is given as follows :—

Gum-dammar	1 part.
Turpentine	5 parts.

or—

Gum-dammar	8 parts.
India-rubber	1 part.
Benzole	200 parts

Photo. Rundschau, Nov., p. 407.

ON THE PHOTOGRAPHY OF THE LUMINOUS RAYS OF THE SHORTEST WAVE-LENGTHS.

A valuable paper by Schumann on the above subject, a translation from the "Sitzungsberichte der K. K. Akademie der Wissenschaften, Wien," appears in the *Chemical News*, and is reprinted in the *British Journal of Photography*, Nov. 3, 17, and 24. It will not allow of usual condensation, and is of interest only to advanced workers.

LOCAL DEVELOPMENT OF BROMIDE PRINTS.

S. G. Gore calls attention to the old method of local development which may be useful to some of our younger readers.

The method, which is only applicable to ferrous-oxalato development, simply consists in developing as usual till the main body of the picture is as dark as required : the acid solution is then flooded over the print, which at once arrests development. Now tilt up the dish till the acid runs off the surface of the paper and collects along the edge of the dish, and taking a good-sized round camel-hair brush charged with developer, apply it to those parts which require more coaxing. It will be found that one has complete command over the development ; the moment any portion is sufficiently developed, bring the dish level again and let the acid flow back over the paper. This process can be repeated again and again until the effect desired is obtained.

Clouds may also be put in in this manner, by flooding the print with acid and draining, when the picture was developed, and then giving the whole sky a supplementary exposure to the lamp and locally developing clouds of such shape as are considered desirable.—*Journ. Phot. Soc. India*, Oct., p. 178.

Leeds (Camera Club).—General meeting held on 23rd ult., Mr. Irwin in the chair. Lantern exhibition of some prize slides.

Leigh.—A meeting was held on the 23rd ult. Mr. R. B. Mawson presided over a crowded audience. A lantern evening was held, the AMATEUR PHOTOGRAPHER Prize Slides were shown, and gave great satisfaction.

Kilmarnock—A meeting was held on 15th ult. The President, Mr. Ferguson, gave a highly successful demonstration on the making of lantern slides. It was agreed that in future the meetings be held on the third Friday of the month.

Croydon (Micro.).—The 24th annual soiree of the club was held on 22nd ult. at the Public Hall, when over 600 guests attended. In addition to the large number of botanical, microscopical, entomological, and general objects of interest shown by the other sections of the club, there was a fine display of work by the photographic section. Amongst those showing were Mr. W. Low-Sarjeant, with several admirable enlargements ; Mr. K. McKean, photographs of old lamps and pipes ; Mr. Dodds, Yorkshire views ; Mr. Collyer and Mr. Roods, a number of views of the excavations at the Roman encampment at Silchester ; Mr. East, several fine views of Arundel Park ; Mr. Epps, some charming little bits of Norway ; Mr. C. H. Moss, Coldwells, etc. Among the transparencies were Mr. Oakley's "Indian Palaces" and a set of Norwegian slides by Mr. J. A. Carter. During the course of the evening several lantern shows were given in a side room, Mr. Cembrano showing his "Alhambra" slides and Mr. J. A. Sinclair his "Italian Lakes" series.

Letters to the Editor.

THE BRISTOL EXHIBITION.

SIR,—In the last few issues of the AMATEUR PHOTOGRAPHER your readers have been entertained by a controversy between Mr. H. P. Robinson and the promoters of an exhibition at Bristol. May I be permitted to point out an error into which both have fallen, and to which I have been waiting, and waiting in vain, for the Secretary of the Affiliation to draw attention.

Mr. Bond says that the P.S.G.B. no more concerns his Council than the latter body would influence the exhibition rules of the former. I would point out that the rules and suggestions with reference to exhibitions were not formulated by the P.S.G.B. nor by its Council, nor did the P.S.G.B. invite the conference which drew them up. The delegates committee of the forty or fifty affiliated societies, a very different body from the Council of the parent society, invited the best known exhibitors and judges to a conference to suggest lines of action for the benefit generally of those societies, affiliated or otherwise, who might realise the evils of the systems most in vogue. The invitation was accepted, the conference held, the result being the rules, etc., already published, to which nearly all the leading exhibitors and judges appended their signatures, while of the one or two who did not actually do this, Mr. Robinson, surely the chief, has now signified his approval. Doubtless Mr. Bond, and that august body he refers to as "*my council*," know far better how to manage an exhibition than, say, Messrs. Blanchard, Cembrano, England, Hodges, Lauge, Keene, Pringle, Sutcliffe, etc., etc., but I fail to see why he should be so cross with Mr. Robinson for not at once recognising the facts, and make inuendoes and attribute motives for an act which any exhibitor of any standing would probably have performed had he been as *au fait* in exhibition matters as Mr. H. P. Robinson evidently keeps himself.

Of course, Mr. Bond and his Council have, as they assert, a perfect right to make what rules they think fit for the conduct of their exhibition, and I would respectfully suggest to Mr. Robinson that on a future occasion he should regard any similar action on the part of a provincial body with pity, as a confession on their part of their conviction that they are unable to secure success of any kind without pandering to the pot-hunting proclivities of the budding exhibitor, rather than that he should pour out upon them the vials of his wrath. It is too much like a steam hammer cracking nuts, and is certain in England, at any rate, to divert sympathy towards the weaker party, where it might be entirely undeserved.—I am, sir, yours faithfully, MEMBER OF AN AFFILIATED SOCIETY.

* * * *

THREE-COLOUR TYPOGRAPHIC PRINTING.

SIR,—The statement which you publish (p. 355), that a firm of English colour printers are engaged in a series of experiments with me, is, like some other reports that have appeared since I came to London, without foundation in fact. I stated my position clearly at the Photographic Congress. The problem of three-colour typographic printing was solved by me years ago, so far as the production of suitable photographs and printing plates. The only real difficulty is in the printing, and that difficulty is so great that ordinary machinery, inks, and pressmen cannot meet it for commercial purposes. Kurtz, of New York, has come nearer than any other man to the necessary conditions in the printing, but it is still very doubtful if he has realized a commercial process. Such experiments are very costly, requiring special printing machinery to commence with, and there was so little prospect of anything more than experimental success that I abandoned the experiments before undertaking the development of the photochromoscope.—Very truly yours,

FRED. E. IVES.

North London.—On 7th ult., annual general meeting. The report of the council was received and approved, and the following officers elected for the ensuing year :—President, Mr. J. Traill Taylor ; Council, Messrs. W. Bishop, J. Brewer, J. Douglas, J. Oakley, and E. W. Parfitt ; Curator, Mr. W. Few ; Hon. Sec. and Treasurer, W. T. Conventon, 50, Highbury Park, N.

Nottingham.—A meeting under the presidency of Mrs. Cowen was held on 15th inst. After the usual business Mr. Morgan attended on behalf of Messrs. Fuerst Bros., demonstrated the new developer Metol. Mr. Morgan first developed a plate which had received half the ordinary exposure ; he then was given a severe test, being set to develop a plate which a member of the club had exposed that afternoon ; the exposure given was *f*/11, for 1-20th of a second. The demonstrator came out of the experiment in a very successful manner, showing a negative which although thin was full of detail. After which the method of printing and developing both lantern-slides and bromide prints was shown in a practical manner.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER VIII.—(*Continued.*)

(30) *Alcohol.* A small addition of alcohol is mostly made to the prepared emulsion in order to accelerate the drying. If a jelly contains alcohol it keeps much longer than without this addition. Even the customary addition of 5 per cent. of alcohol to emulsions preserves the same considerably. An addition of about 5 parts of alcohol to every 100 parts of liquid prepared emulsion was frequently recommended in earlier years.[1] Lately, however, the use of this has been dropped, since, as a rule, it is useless; many found, however, that the film was less liable to the formation of white spots if alcohol was added. Too much alcohol causes the formation of honeycomb-like spots in the plate. Ten per cent. of alcohol is generally too much, or in the most favourable instances appears to be the utmost limit. Above this the gelatine flows badly and unequally and gives the cell-like spots which are accurately described under "Failures." If the emulsion be mixed with excess of alcohol it will be precipitated in curds or lumps; the gelatine gains by this in firmness. (See Chapter XVII.)

(31) *Beer* was mixed with the emulsion by Palmer[2] and Houlgrave,[3] and has never been used since.

(32) *Acetone.* Stork[4] stated that when he mixed 50 per cent. of acetone with the prepared washed emulsion, previously melted by heat, he obtained a watery, quickly drying emulsion, which did not decompose.

(33) *Dyes.* The sensitiveness of bromide of silver for certain colours of the spectrum is frequently increased by the addition of dyes to the gelatine emulsion, and the plates are made more sensitive for certain colours, green, yellow, and red, to which the ordinary emulsion is very insensitive. On this is founded the preparation of "orthochromatic" and "isochromatic" plates, and the action of the principal dyes is described in a special chapter, "The Action of the Solar Spectrum," and further in "The Preparation of Orthochromatic Plates."

Wilde states that glycerine added to the emulsion lowers the setting power and makes it grey and foggy. Sugar and gum arabic lessen the sensitiveness considerably. Iceland moss jelly lessens the sensitiveness slightly, but makes the emulsion keep better.[5]

Krause recommended the use of formaldehyde sodium bisulphite, and the dye obtained by precipitating fuchsin with oxymethylsulphonic acid as a means of accelerating the ripening of an emulsion, and obtaining to some extent an orthochromatic effect. Having collected the dye precipitated as suggested above from an aqueous solution of fuchsin, the following is prepared :—

Formaldehyde sodium bisulphite	...	...	150	parts
„ ammonium	...	...	150	„
The above-mentioned dye...	...	...	1	part

Add to the emulsion before ripening as much of the above mixture as will equal 1·5 per cent. of the total weight of the silver haloids.

According to Eder[6] formaldehyde sodium bisulphite does not accelerate ripening, and tends to produce fog, and sometimes even lowers the sensitiveness.

CHAPTER IX.

THE ADDITION OF IODIDE AND CHLORIDE OF SILVER TO GELATINO-BROMIDE OF SILVER.

One must always bear in mind that iodide of silver is reduced with greater difficulty by a developer than bromide of silver; chloride of silver, on the contrary, more easily. Bromide of silver thus stands between the two with respect to its capability of reduction. Chloride of silver by itself alone gives strong fog with the ordinary developer for bromide of silver; iodide of silver, on the contrary, extremely weak and thin images. The addition of iodide of silver to gelatino-bromide of silver was first recommended by Penny[7] in 1877, and more accurately studied by Abney, 1880.[8] The advantages of iodide of silver in gelatino-bromide of silver are: it keeps the emulsion clear, permits a longer boiling of the emulsion without giving fog, etc. Iodide of silver acts, however, quite differently in bromide emulsion in the spectroscope as well as in photographic practice according to the method and way it is incorporated with the same, a fact which Schumann[9] first recognised and Dr. Eder confirmed.[10]

(I.) Mixture of Prepared Iodide and Bromide Emulsions.

If one prepares separately emulsions of iodide and bromide of silver, and mixes the two after washing, this bromo-iodide emulsion is less sensitive generally and specially to red and yellow light, which Abney[11] and H. W. Vögel[12] have contended is very important, because a brighter light may be used for developing; it bears a longer exposure, without solarising, than pure bromide of silver.[13] Many found a bromo-iodide emulsion less sensitive than a pure bromide emulsion; *e.g.*, H. W. Vogel, under certain conditions Burton,[14] Barker,[15] Reid,[16] if the proportion of iodide of silver rises above 1/50 of the weight of bromide of silver. According to Elsden[17] the addition of iodide of silver makes the negative thinner, keeps the shadows back and makes them glassy, and the colour of the negative more brownish. The presence of iodide of silver with bromide is recognised by examination in the spectroscope by two maxima of action. (See chap. XIII.)

If the pure bromide emulsion does not work quite clear, the bromo-iodide emulsion also gives fog; the mixed emulsion allows of longer development and appears in this case even more sensitive. The increase of the thinness of the negative tends, according to the nature of the original emulsion, sometimes to its advantage, sometimes to its disadvantage. Plates which are rich in iodide of silver fix not only more slowly than pure bromide plates, but retain also frequently in a repeatedly used fixing bath a faint milky fog, which disappears in old baths only after several

[1] Alcohol in the gelatino-bromide of silver was first recommended in 1873 by an anonymous writer, "Ostendo non Ostento," in the *Brit. Journ. Phot.* Later the use of this addition was described by Foxlee in the *Brit. Journ.* (1873 and 1878), further by Taylor in the *Brit. Journ. Almanack* for 1878 and others.

[2] *Brit. Journ. Phot. Almanack*, 1877, p. 87.

[3] *Brit. Journ. Phot. Almanack*, 1881, p. 78.

[4] *Phot. Wichenblatt*, 1881, p. 148, from *Moniteur de la Phot.*, 1881, p. 63.

[5] *Photo. Wochenbl.*, 1892, p. 30.

[6] *Photo. Corresp.*, 1890, xxvii., pp. 105-107.

[7] "Year Book of Phot.," 1878. See *Photo. News*, 1883, p. 61, for Penny's dispute with Abney about the priority of discovery.

[8] *Photo. News*, 1880, pp. 174, 196. Abney, "Photography with Emulsions," 1882, p. 21.

[9] *Photo. Wochenbl.*, 1882-3 4.

[10] *Photo. Corresp.*, 1884, p. 95.

[11] *Photo. News*, 1880, p. 196, and 1881, pp. 8 and 20.

[12] *Photo. Notizen*, 1881.

[13] Abney, *Brit. Journ. of Phot.*, 1881, p. 528.

[14] *Photo. News*, 1882, p. 71.

[15] *Photo. Mitth.*, vol 17, p. 90.

[16] *Photo. News*, 1882, p. 71.

[17] *Photo. News*, 1883, pp. 358, 534.

hours' bathing, but very quickly in a fresh bath.[1] If one digests such mixed emulsions with heat, their sensitiveness rises, and the qualities approach more nearly by degrees to those described under section 2, which Schumann first found. Emulsions which are prepared by mixing washed iodide of silver with bromide emulsion are seldom used in practice now.

(II.) BROMO-IODIDE EMULSIONS, WHICH ARE PREPARED BY THE ADDITION OF SILVER NITRATE TO MIXTURES OF IODIDE AND BROMIDE OF POTASSIUM.

If one dissolves iodide and bromide of potassium, or the ammonium salts with gelatine, etc., in water, and add to this mixture the silver nitrate, the formation of bromo-iodide of silver takes place at once; it appears to form a kind of double compound, at least the behaviour of such bromo-iodide of silver is different to that of separately prepared and then mixed iodide and bromide of silver. (Compare Chap. XIII.)

A bromo-iodide emulsion sufficiently digested is more sensitive to lamplight as well as daylight than a pure bromide emulsion.[2]

Many good commercial emulsions are now prepared with bromo-iodide of silver, in which the makers use from 1 to 5 per cent. of iodide of silver of the amount of bromide of silver, and Dr. Eder also recommended this addition for boiled emulsions in the earlier editions of this work. Yet there are respectable factories which produce pure bromide emulsion, which is preferred because beautifully worked-through portraits can be prepared with it, which develop quickly, and fix quickly. The question whether pure bromide or bromo-iodide emulsion is more suitable for portraiture is not yet at present definitely decided; the majority, however, are inclined to bromo-iodide. Emulsions with 10 per cent. of iodide of silver are not found in the market, because, as a rule, they give thin negatives, which are developed with difficulty. For landscapes Dr. Eder considers most decidedly bromo-iodide emulsions, with 3 to 4 per cent. of iodide of silver, better than pure bromide emulsions, because halation is easier to avoid with the former, and thin boughs sharply defined against the sky are better rendered.

Generally one can say that an emulsion with a small proportion of iodide allows greater latitude of exposure. With a large proportion of iodide the sensitiveness can be strongly increased by continued digestion of the emulsion; the images become, however, flat in the high lights, and exhibit a want of vigour and brilliancy. Since the presence of iodide acts as a preventive of fog, one can digest such bromo-iodide emulsion longer, without fear of fog. The practically admissible proportion of iodide fluctuates from 1 to 10 per cent., that is to say, to every 100 parts of bromide of silver from 1 to 10 parts of iodide of silver may be used. This applies to the ammonio-nitrate as well as to the boiled emulsion.

In the ammonio nitrate emulsion for ordinary portraiture no addition, or an addition of only 1 to 2 per cent., of iodide of silver[3] is to be recommended, so that the plates may keep clear. Above 5 per cent. should seldom be used, because the brilliancy and plasticity of the plates suffer. Dr. Eder found 10 per cent. of iodide of silver too high, because the images were very thin, and could not be vigorously developed with ferrous oxalate, and only with difficulty with pyro. Since however, emulsion rich in iodide can be digested even at 50 to 60° C., one obtains great sensitiveness, and Scolik[4] as well as Burton[5] prepared rapid emulsion in this way.

In the acid boiling process a small proportion of iodide is favourable, although many retain here the pure bromide emulsion. Dr. Eder recommends from 3 to 5 per cent. of iodide of silver. Iodide of silver in the boiled emulsion causes in small quantity (1-25th to 1-50th), an increase of the sparkle and delicate gradation of the negative, promotes clearness, retards the development, and gives with sufficiently long development the same or more details in the shadows; in larger quantities (with 1-12th) a considerable loss of vigour appears, which is more noticeable with the oxalate developer, less with the pyrogallol developer. The pyro developer can be better adapted to an emulsion rich in iodide than the oxalate developer.

With the cold ammonia emulsification process, according to Henderson, a greater proportion than from 1 to 2 per cent. is prejudicial.

Though bromo-iodide of silver emulsion exhibits in the spectroscope a considerably greater sensitiveness for yellow and green than pure bromide of silver, the sensitiveness in photographing pigments is, nevertheless, equal in both, likewise to the yellow glass of the developing room.[6]

(To be continued.)

Amateur Photography in Wales.—The Gold Medal offered by the proprietors of "Darlington's Handbooks" for the best work done in Wales by amateur photographers in 1893, is awarded to Mr. Augustus Mitchell, Manchester.

Ashton-under-Lyne.—On 22nd Mr. William Moss gave a very interesting and successful demonstration on micro-photography. Mr. Moss in opening explained the working of his camera, which he had had made specially for his own use. It combined long extension and ease of working with perfect rigidity. The lens tube was one made short, and it took the place of the ordinary tube on the microscope stand. The light used was the usnal powerful paraffin lamp. Mr. Moss explained that the lenses were microscopic objectives, and were better if corrected for photographic purposes. They were 3 in., 1 in., and 1-8th in. focus, and with these the power of magnification ranged from three times to 200 times. If a smaller enlargement were required, the ordinary photo lens could be used. Exposures varied much, from two seconds to hours. A slide representing a subject to which he had given much time and study, the tongue of the snail was put in the microscope, and after focussing on the ground glass, clear glass was substituted, and a compound focussing glass used to bring the object into perfect focus. The clearness of the image obtained by this method was evidently new to most of the audience, and was much appreciated. The next object photographed was a very small shell, being one of a number sent by the Rev. James Hadfield from Life in the Loyalty Islands, and in it has been discovered a distinctly new variety. Both objects we successfully developed and handed round the room.

[1] Schumann, *Photo. Wochenbl*, 1884, p. 319. Dr. Eder can confirm this statement.

[2] First published by Schumann, in *Photo. Archiv.*, 1882, p. 121.

[3] Scolik recommended first from 2 to 3 per cent. of iodide of silver to prevent fog for portrait emulsion with ammonio-nitrate of silver. (*Photo. Corresp.*, 1888, p. 265.)

[4] Scolik mixes: (A) Bromide of potash, 24 parts; bromide of ammonium, 24 parts; iodide of potash, 5 parts; water, 500 parts; gelatine, 80 parts. (B) Nitrate of silver, 60 parts; water, 500 parts. Dissolves and mixes with ammonia till the brown precipitate first formed is again dissolved; then heats A till the gelatine is dissolved (40° C.), adds B in small quantities, and shakes frequently; after which allows it to set and washes it. A pyro developer acts best; *e.g.*, the potash developer. (*Photo Corresp.*, 1882, p. 375.)

[5] Burton gives the following directions for the preparation of a highly sensitive gelatine emulsion:—(I.) Nitrate of silver, 20 parts; water, 100 parts; ammonia, sufficient to dissolve the first formed precipitate. (II.) Bromide of potash, 16 parts; iodide of potash, 1 part; Nelson's No. 1 gelatine, 4 parts; and water, 200 parts. (III.) Dry gelatine, 50 parts. One heats solution II. to 70° C., and adds the cold solution I., and shakes. One places for twenty minutes in a water bath at 50° C., allows to cool slowly, adds III., allows this to swell for twenty minutes, places in water bath till melted; another allows it to set. Still higher sensitiveness is obtained if one digests in the water bath at 70° C., shakes frequently, and after the gelatine is dissolved precipitates the emulsion with alcohol. (*Photo. News*, 1886, p. 177.)

[6] Sawyer, and later also Debenham. (*Photo. News*, 1884, p. 374.)

Pictorial Photography; its Principles and Practice.

By A. H. Wall.

(*Continued from page* 316.)

CHAPTER VIII.

UPON CONTRAST AND VARIETY.

In the act of observing any natural scene or object, whether it be landscape or figure subject, the mind is simply and absolutely occupied at any given instant of time by a definite single conception, the effect not of separately observed parts, but of parts seen in unity, combined as a whole. Directly the eye ceases to take in the entire view and to be focussed upon any particular part of it, large or small, instantly the effect of the whole has gone. For it is impossible to see objects collectively and separately at the same instant of time, although, owing to the wonderful rapidity with which the mind is successively influenced, this fact is not generally recognised.

From it partly we derive the principle of making all the elements of a picture subordinate to some general effect, which is in turn subservient to the artist's dominant idea, that which every part helps to express.

I do not think I can give you a more triumphant illustration of this than some years since I found in a well-known picture, by J. Phillips, R.A., called "La Gloria—A Spanish Wake." It was founded upon a custom which prevails in Spain of celebrating the deaths of infants too young to have committed any sin by a joyous feast. In this picture were opposites of the most powerful character placed side by side, in immediate contact. The dead baby was dimly seen upon its flower-decorated bier in the gloom of a candle-lighted chamber, and through a partially opened door. This in itself was a most touching and impressive element of the artist's story.

But music, dancing, singing, feasting, chattering, laughing, smiling congratulations, with attractive costumes and characteristic attitudes, crowded the canvas, making many and various and forcible appeals to eye and mind. What a strange variety! How heartless and coarsely unfeeling it all seems! How reproachfully we should think of a creed which thus opposes itself to all our purest, most tender, and natural sympathies and heart-softening emotion! Should, if the artist would let us. But he does not. The same glance that takes in the pretty white corpse resting a blossom amidst blossoms, amidst the dancing, the feasting, the singing, the twanging guitars, and the throbbing, jingling tambourines, etc, gives us that which dominates the whole, and makes every part subordinate to it. Nature triumphs over the priest, as nature always will when the priest sets himself up in unnatural, unfeeling opposition to the heart's most tender and powerful emotions. That is the artist's dominant, nobly protesting idea. The poor heart-broken mother has stolen away towards her dead little one, from the merry throng of friends, relatives, and neighbours, her tambourine has fallen with a jingling crash to her feet, and she is upon her knees in a passionate outburst of bitter, unrestrainable grief. The husband, with a pale stern face, is vainly trying to rebuke her. A young woman lovingly sympathises with her while earnestly endeavouring to protest against the wickedness of her sorrow; and one of the singing women turns upon her a pair of soft, large dark eyes full of sympathetic feeling and tears.

Here the triumph of the artist was one of the highest order and the most difficult of achievement. But the principle is the same when it underlies far less important and more readily managed pictorial and poetical elements. Powerfully contrasting lines, tones, lights, shadows, all for like reasons require subordinating and uniting influences, as I have already endeavoured to demonstrate. As neither the dead baby in its nest of flowers, nor the bright glittering merry throng was allowed to dominate the eye and mind of the spectator in this fine work of art, so each contrasting or harmonising colour, line, tone, light, shadow, etc., was pressed into his service as parts of a complete whole, at once exciting and subduing, contrasting and uniting, distracting and attracting.

Contrast was in this picture a dominant feature—contrast in its greatest strength. Variety was not less conspicuous. But over and above all, appealing in a glance to heart and mind, was the greatest and grandest idea—Nature's Triumph. The picture made a very deep impression upon me when I first saw it in the Royal Academy Exhibition of, I think, 1846, and sitting down to say something about contrast and variety as elements of the picturesque for the papers, I felt that no more forcible illustration of their application in its highest form could be selected.

In obtaining contrast we thus see that harmony need not be destroyed; the two are often found co-existent in our best works of art, and each gains from the other's presence. For instance, take another of Phillips' works, a well-known and often engraved work, "The Spanish Wake," in which we have in perfectly harmonious relationship such contrasts as force and delicacy, the one giving brilliancy, the other refinement, and both blending to express the dominant sentiment of the picture. See, too, in the works of Holman Hunt how elaborate detail and breadth of effect, qualities which are generally spoken of as opposite, blend in giving expression. In some of the old masters, again, what perfect subtle combinations of opposing qualities are discoverable, such as grandeur and simplicity, poetry and realism, variety of action or movement with the calmness of repose.

The word harmony is a word of Greek derivation, and implies consistency in combination, that which Ruskin calls a source of power and grandeur, uniting sentiment or feeling with propriety and simplicity. Priestley spoke of the same idea in poetry when he wrote critically, "No digression can be said to be unexceptional that doth not connect equally well at both ends with the piece to which it is introduced." Hogarth, too, says of painting, "Fitness of parts to the design for which every individual thing is formed, either by art or nature, is first to be considered." And Henry Howard, R.A., in one of his Academy lectures, said, "To produce an agreeable effect every part must bear a varied and proportionate relation to all the rest." To blend variety and contrast so as to produce unity of effect, sentiment, and feeling is then the end which all the previous chapters of this series have so far advocated. Sameness and monotony would soon result from the absence of variety and contrast. Contrasting sentiments, thoughts, and images would be powerless ungoverned by some dominant quality. A very suggestive illustration of contrasting elements in combination, which will help to make my meaning more clear, is found in these lines by Thompson, quoted from his "Seasons":

> "The cottage hind
> Hangs o'er the enlivening blaze, and, taleful, there
> Recounts his simple frolics. Much he talks,
> And much he laughs, nor recks the storm that blows
> Without, and rattles on his humble roof."

Here depicted with the greatest simplicity we have cold and darkness contrasting with warmth and light; the fierce, angry storm without, and quiet peace and safe shelter within; the moaning, melancholy, shivering winter wind, and merry laughter; the suggested thought of outcasts shivering in the blast, and the jocund stories of this cheerful fireside group. Each contrast perfectly harmonised by the dominant idea. The previous lines of this poem are also very suggestive.

In music, as in poetry and painting, the same principle is developed, contrasting notes forming parts of harmonious combinations. "Painting," wrote Simonides, "is but mute poesy; and poetry, speaking painting." And form and colour in painting,

he might well have added, are but music and poetry combined. In architecture, too, the very same principles are found. What would the effect of a building be if deprived of its contrasting lines and forms or of their variety? Is a flat-faced, monotonous brick house, all angles of the same kind, with square holes each exactly like the other for windows, a door always in one or the other of two places, a thing of beauty? And if not, why not? Is it not because it lacks contrast and variety? I have by me one of Rejlander's photographs taken when he was a young man studying art in Rome—a view of the basilica of San Paola Fuori le Mure. It is perhaps one of the most ancient relics of Christian art in Rome. These old builders worked in a spirit of love and reverence that made ugliness a sin to them, and beauty godliness, and this particular relic is one of the most forcible illustrations in architecture of contrast and variety.

Splashes of Ink.

BY PENFEATHER.

A VALUABLE faculty in a photographer is that of being able to estimate with approximate accuracy short spaces of time, or, to put the matter practically, to count seconds correctly. It is an accomplishment not very difficult to acquire, and not at all uncommon. There are many photographers who, for instance, can estimate one minute—60 seconds—time after time, with an error of not more than one half of a second; that is, with less than one per cent. of error, an amount quite inappreciable in the exposure of a plate on an ordinary subject. Of course, it is quite immaterial by what interval we measure time, or whether we adopt for the unit the recognised "second" or some arbitrary interval to suit our own idiosyncracy, as long as no comparison is needed with other people's work, but directly a comparison is required to be made, the necessity for a common unit as a basis becomes apparent. This naturally applies to all measures, whether of time, weight, quantity, or dimension. In exposing, if the exposure required is of short duration—say from one-half to five seconds, the use of a time-measuring instrument, a watch or a chronograph, is likely to lead to as many failures as it would prevent. It involves the employment of one hand to hold it, which might be more usefully employed in holding down the focussing cloth or otherwise, and the dodging of the eye between it and the lens cap, at the time of removal and replacement; also, what is of far more importance, the watching of the hands or pointer requires some mental effort; whereas, to him who can count seconds mentally there is no distraction of the attention from the actual operations of uncapping and recapping the lens, and keeping an eye on the subject. These objections are to some extent removed if the exposure is made by mechanical means, as by a shutter; but at any rate, it is so easy to learn to count seconds that it is worth any one's while to master it. Perhaps the simplest method of learning is with the aid of a pendulum, which may be of the roughest possible construction; a piece of thread with a small weight attached, suspended from a nail in the wall so that it swings freely, is quite as good as a more elaborate contrivance. The length is to be adjusted so that each beat will mark exactly one second. In the latitude of London the length of pendulum required is 39·1398 in., or about 3 ft. 3⅛ in.; but as the length has to be measured from the point of suspension to the centre of gravitation of the pendulum, which centre has to be determined before the measurement can be made, a watch should be used to regulate by. If a French nail be driven into the wall, and a thread, slightly longer than the required length, fastened to it so that it will not slip round, the adjustment may be made with great accuracy by turning the nail round with a pair of pliers, so as to wind, or unwind, the thread, the principle being exactly the same as that of tuning a piano or violin. When adjusted, at convenient opportunities the pendulum should be set in motion, but there is no necessity for any effort to be made to impress the duration of the beat on the memory, ordinary occupation may be followed without paying any particular attention to it. In a short time it will be found that the mental picture of the pendulum can be recalled almost unconsciously whenever required.

DURING the severe weather which we may now expect, there will be little outdoor photography, but those who have the convenience of a comfortable dark-room will not allow it to remain unused, as there are many kinds of photographic work which afford suitable employment for the long winter evenings—making lantern slides and enlargements, for example. For personal comfort, means will be taken to secure an endurable temperature in the work-room, but many are apt to overlook the fact that chemical action takes place with restrained vigour at a low temperature, and that developing and other solutions act very differently at 40 deg. from their behaviour under summer conditions. An exposed plate which with a developer at 60 deg. or 65 deg. would develop quickly, brightly, and cleanly would with a developer 20 deg. lower in temperature entail a long wait for the image to appear, and in the end would make a negative flat and without pluck. There is a temptation in such cases to hurry the proceedings by adding more of the accelerator, but this is a course that hardly mends matters, as it introduces more evils than it cures. The true remedy is to warm the solutions and the dishes used. Indeed, the developer may be made warmer than would be safe at midsummer, for frilling and other hot-weather troubles do not arise so much from the high temperature of the developer, which, if made with tap-water, is generally cooler than the air, as from hot hands and from exposure, while saturated with moisture, to the air. The moral is, use warm water to make up solutions. Those who are critical in the tone of their lantern transparencies will do well to take heed, for—I do not intend a joke—I will defy any one to produce warm tones with a cold developer.

WE may expect to have shortly in the market a new platinum printing paper, which promises several advantages over the varieties now to be obtained. The new paper, like gelatino-chloride, may be printed out, or, if a less exposure be given, can be developed, a modification of the ferrous-oxalate developer being employed. Another advantage claimed for it is that, according to the amount of moisture present in the paper at the time of printing, a soft or hard print may be obtained; so that prints possessing some degree of uniformity may be produced from negatives varying in density. Dr. Hesekiel, of Berlin, who is to be credited with working out the process, is now in England and shows some very fine specimens of printing which fully prove its capabilities. Apart from the process, there is a novelty in the paper itself. It is of considerable thickness, it might almost be called thin cardboard, and is impressed with a "grain," having the appearance of network when looked at under a magnifier. This grain has great effect on the print, giving the shadows greater depth, while the lights appear soft, without any apparent loss of brilliancy. I believe there will be no necessity to use a calcium tube for storing the paper, as damp does not spoil it. If it will keep well, and the working is as simple as it seems to be, there ought to be a prosperous future for it.

Widnes.—At the inaugural meeting the President, Mr. V. C. Driffield, read a paper, and gave a demonstration on "The principles involved in the calculation of exposures for contact prints on bromide paper." In introducing his subject Mr. Driffield gave his definition of the term density as the amount of silver deposited per unit of area; opacity as the optical property of a substance to impede the passage through it of light; transparency the inverse of opacity; his unit of light and exposure to be the amount of light emitted by a standard candle acting for one second at a distance of one meter, and called a candlemeter-second; and proceeded to explain the principles upon which he based his calculations in determining the exposure required for a given negative upon given paper. Two factors had to be ascertained, viz., the density range of the negative, and the range of gradation of the paper; and in order to produce the best possible print from a negative its density range should coincide with the range of gradation of the paper used. He described his method for determining those factors, and having been supplied with two negatives by Mr. Warner he had previous to the meeting and in Mr. Warner's presence estimated the densities of these to be such that with the paper he intended using (Ilford slow bromide) the range of gradation of which he had also estimated, the exposure required in one case was 1,000 cm., and in the other 440 cm. By means of a shadow photometer a lamp was placed at a distance from the negative, which gave light equal to twenty candles, and to save time pieces of paper were exposed behind the negatives to this light for $\frac{1000}{20} = 55$ seconds and $\frac{440}{20} = 22$ seconds respectively. The pieces of exposed paper were developed and fixed, then handed round for inspection. Mr. Warner stated that better bromide prints could not be obtained from his negatives. In concluding, Mr. Driffield expressed the hope that he had led some of the members to see the advantage of working by methods of precalculation, and although judged at first sight it seemed a lot of trouble, he could assure them from long experience it was well worth it, that not only by adopting this method would time, worry and expense be saved, but the pleasure of working at photography was vastly enhanced when calculation and almost certainty of result was substituted for rule of thumb and depressing failures.

The Practical Testing of Photographic Objectives.

By Dr. Ad. Miethe.

[Read at the P.S.G.B. Congress].

Though it is of great interest to the optician to obtain an exact knowledge of all the properties and faults of any photographic system by numerical calculation, it is generally sufficient for the photographer, whether professional or amateur, to form a rougher idea of the capability of any photographic objective. The following is intended to aid the amateur to determine by comparison, without any particular apparatus, the capabilities of lenses, and it may be mentioned at once that this examination is just as exact (and much more comprehensible with regard to its results) as the measurements obtained by the use of the so-called testing apparatus.

For all examinations of photographic lenses the maxim must be laid down, that only lenses of exactly the same character may be compared together, and that, above all, their constants must be decided. We take it for granted that the amateur knows the simple methods employed for ascertaining the focal length and the working aperture, and thereby the intensity of the instrument. We therefore have only the following questions to decide:—

1. Which instrument with a given aperture not too small for instantaneous photography gives the largest area of sharpness?
2. Which instrument gives the most even illumination of field within this area of sharp definition?
3. Which instrument gives negatives with the greatest absence of fog?
4. Which instrument gives with the largest stop the largest area of sharpness?

All other questions which may be proposed in comparing objectives are useless; for instance, it is often said that this or that instrument possesses a greater depth of definition than another. We know, however, that this depends solely on the strength of lighting, at least, in so far as concerns the centre of the field.

Our first question must therefore be settled, because on the utilisation of the sharpness with the largest apertures depends the applicability of the instrument for instantaneous work. The test is very simple. Supposing two lenses are to be compared, one with the greatest illuminating power of *f*/8, the other of *f*/7·3, we should commence our work by stopping down the lens of *f*/7·3 to *f*/8, in order to equalise the conditions under which both lenses work. If a suitable stop were not supplied with the lens it could be easily made of blackened cardboard or tin. We now screw the lens to the fixed apparatus, which must be reliable as to keeping the surface of the screen and of the sensitive plate vertical to the axis of the lens. We then focus a distant object, perfectly sharp, for which purpose it is best to use an achromatic magnifying glass placed upon the centre of the focussing screen. The best object for this purpose is a so-called test-table (a flat wall about ten feet square would do), which is completely covered with a net of lines, printed pages, geometrical designs, silhouettes, etc. The objective must not be too near this wall, the distance must be at least fifty times that of the focal length. Care must be taken that the apparatus is so placed that the axis of the lens is directed as perpendicular as possible to the surface of the test-table. Should the focussing not result in an absolute sharpness at the middle of the field with the stop employed, it is necessary, by introducing other stops, to find out the largest aperture which will give perfect sharpness, and to insert a corresponding stop in the other objective. When in this way we have focussed the centre with the greatest possible accuracy we proceed with the exposure. For this purpose it is best to use a plate of very fine grain, such as a transparency plate, and to expose for as short a time as will suffice. This done we fix the other objective without changing the position of the camera, and take a second photograph with the same length of exposure and relative aperture. It is important that both exposures are of exactly equal duration and that the plates are developed together in the same tray. From the plates so obtained various things can be ascertained by examining them on a retouching desk with a magnifying glass, starting from the centre, and marking those points where sharpness is just appreciably beginning to fall off. That objective which gives the larger part of the image in sharp definition is the more perfect one, because the object was photographed under the same angle in both cases. But a further examination of the plates gives us an answer at once to our second question, viz., which of the two objectives gives the more even illumination of the field. It is easy to notice, especially if the exposure was a comparatively short one, that the density of both negatives decreases from the centre to the edges of the plates. The more rapid this decrease is the less suitable is the lens for instantaneous work.

If we now repeat this comparison test of the two objectives with a very small stop, say of *f*/40, we can form an idea of the capability of the lenses for all such cases in which it becomes necessary to employ a small stop, whether to obtain depth of definition, to improve the definition at the edges of the field, or to prolong the exposure.

It will frequently be found that the proportionate advantage of one instrument over the other in the first trial proves to be the reverse in the second. So it may happen that an objective which with a full aperture shows poor definition at the edge of the plate and which for this reason would be declared to be inferior to the other, may, if worked with a small aperture, prove vastly superior to its rival. In estimating the values of the competitive lenses it is therefore necessary to consider for which special purpose they are intended to be used. For instantaneous photography the preference will always be given to the lens which, with a full aperture, gives the largest area of good definition; while that lens is the best for landscape photography which with a rather small stop gives sufficient sharpness over a wide angle, with a fairly even illumination of the picture.

An important test which is rarely resorted to, though it can be carried out with very little trouble, is the one referred to by question three, viz., the examination as to the absence of fog, that is, the brilliancy of the picture produced by the lens.

There is formed in each lens by the repeated reflections from its polished surfaces, a certain amount of false light, which under certain circumstances may cause more or less fogging of the plate and a conspicuous flatness of the picture. The test as to this property of the lens is very simple. Fix on to the centre of the focussing screen a piece of tinfoil or black paper of about the size of a pea, focus the objective sharply upon the horizon, and then step out with the camera into the sunshine. The lens must then be directed towards the sun, so that its image falls exactly upon the tinfoil or paper spot. Now move the camera a little to and fro, and you will observe a number of luminous circles of various diameters, arranged in a straight line, which change their size and position according to the motion of the apparatus. These luminous circles are nothing else than conical pencils of rays of false light thrown by the lens upon the flat surface of the screen, and their size gives a clue as to the amount and harmfulness of the false light peculiar to the lens. If the size of the stop used for this purpose is taken as a unit, that objective must be declared superior in this matter of which the largest luminous circle is in proportion to this unit of the greatest diameter. Besides this, that objective is generally the superior one of which the number of the visible luminous circles is the smallest and the increase of their diameters the quickest.

The ordinary photographic lenses of the aplanatic type generally show three or four, sometimes even six such luminous circles, if the operator covers his head with a focussing cloth in order to shut out as far as possible all extraneous light. Experience has shown that under unfavourable conditions the objective gives also a distinct spot of light, if the smallest of the luminous circles is of about six times the diameter of the stop. The objective of which the smallest luminous circle is about ten or fifteen times the diameter of the stop would be considered a very good one, and such lenses give very clear negatives.

The necessity for ascertaining by personal tests the values of the many types of objectives has lately become a very urgent one. The great variety of new types of objectives lately introduced by English and German opticians makes it very difficult for the photographer to determine which he will select. The modern anastigmats and the somewhat similar concentric lens of Schroeder have raised the standard of perfection which may be reasonably required of an ordinary photographic system, to a very considerable extent, and it would therefore be useless to compare such instruments with older ones, such as aplanatic and symmetrical lenses, at all; they are very much superior to them. But it is not so easy to decide the question as to which of all these new systems should be preferenced. In Germany it is chiefly Zeiss and Goerz who claim to have produced the most perfect objective. Until lately the palm has been given to the Zeiss anastigmat, *f*/6·3, as the undeniably best objective extant for instantaneous photographs; this position it has now, in our opinion, lost, as it is much surpassed by the new double anastigmats of Goerz, and in all cases where the illuminating power of this instrument is sufficient (*f*/7·7) it may deservedly be called the best of all existing objectives.

Quite recently, however, the firm of Zeiss have endeavoured to produce an objective, in the form of their new anastigmat *f*/8, to be equal in value to that of Goerz. It is perhaps not yet decided in how far the makers have succeeded. Certain it is that the new anastigmat of Zeiss *f*/8 is superior to the former Zeiss objectives, and only careful comparative tests will reveal whether it is equal or superior to Goerz's instrument. In any case, this much can be said, that photographic optics have in the last five years made advances which before that period perhaps nobody would ever have imagined. A further essential improvement is, one might say, scarcely necessary. All the new instruments allow with an aperture of *f*/8, which is sufficient for nearly all purposes of instantaneous

photography, the reproduction of a sharply defined picture with its greatest dimensions at least equal to the focal length of the lens. The old aplanats, however, remain very much behind this; they cover, according to circumstances, a plate of hardly two-fifths of their focal length with absolute sharpness.

Photography at the World's Fair.

By JOHN FRETWELL.

(*Continued from p.* 366.)

TURNING from the land of my adoption to that of my birth, I did not expect to find anything very attractive, because the ungenerous action of America in regard to her tariffs is of itself sufficient to prevent the foreigner from taking much trouble about exhibiting at Chicago. His goods may be copied here. They are not likely to be paid for in sufficient quantities to remunerate him for the trouble of exhibition.

Nevertheless, I was agreeably surprised at the British exhibit. Your great railroad and steamship companies, your colonies, and some of your municipal institutions made the most extensive use of photographs, mostly of high quality, in illustrating their respective departments.

The loan collection of British photographs, both amateur and professional, certainly had not its equal—as a collection—in the exhibition.

Van der Weyde exhibited his work taken by electric light, which is of more value to you than to us who see the sun almost every day, though in smoky Chicago it may be of more use than in clear New England.

The work of his photo-corrector was also there, and since then we have learned from his specifications how he uses ice for making lenses.

Ross, Beck, and Watson were the only exhibitors of apparatus, while the men who make ordinary qualities at low price were altogether absent.

I sought Dallmeyer's new lens in vain; it would not have been represented but for Boissonnas's view in the Swiss department. I asked for it at the American agents, Anthony's, and though informed that they had one, could not see it, and so had to content myself with examining the similar instruments of Miethe in the German, and Clement and Gilmer in the French exhibits.

But when I left this exhibit and came to those of France and Germany it seemed that I had got into a new world.

The American exhibit was simply one of tradesmen who wanted to sell their goods, the English that of a few individuals, the excellence of whose goods enabled them to surmount the barriers of the tariff, but those of France and Germany were the collective exhibits of men who, under scientific leadership, had public spirit enough to put the trade scientific before the trade sentiment. No part of the whole Exhibition was so seductive to me as the collective exhibits of instruments of precision shown by the French and German Governments.

Last winter I had applied for three patents on panoramic cameras. Only one was granted me, and I learnt that my ideas in regard to the others had been anticipated by a Monsieur Damoizeau. Here I found his panoramic camera with adjustable focus, taking the whole 360 deg. of the horizon, and ten different sizes of the Cylindrographe Moessard, taking 170 deg. Either of these would be invaluable as an aid to geodetic surveys.

That of Damoizeau, costing £50 in Paris or London, but kept out of America by a prohibitive duty, is the most widely applicable, because the focus is variable, while those of Moessard have a fixed focus, and range in price from £15 for the camera with lens of 4 in. to £52 for that of 20 in. focus. But Monsieur Damoizeau's apparatus seems to me too delicate for the rough work of the explorer.

Next in scientific interest came the exhibit of Colonel Laussedat, director of the National Conservatory of Arts at Paris, containing camera lucida, telemetrographe, and other instruments to enable engineers to make drawings and plans of distant objects. The most perfect phototheodolite for making surveys by photography that I have yet seen was exhibited by Colonel Laussedat; its metal parts were all of aluminium.

With such an instrument Monsieur Deville, the Surveyor-General of Canada, made a photogrammetric survey of the National Park in the Rocky Mountains.

Of course, the lenses of Francais, and Clement and Gilmer, with their telephotographic lens, were exhibited with a host of other apparatus by well-known Paris makers.

In another part of the French exhibit was a wax figure of a murdered man, with a camera above arranged so as to take a portrait of the corpse for police purposes, and a model of the apparatus used for photographing criminals. In connection with this was a collection of portraits illustrating what the French call "Photographie parlé," or spoken photography, affording the means of telegraphing from one police office to another the chief features of a suspected individual: Nose, No. 7; mouth, No. 6, and so on, and so leading to his quick identification. I could not help thinking, as I read it, of that article on "Photo-Typography" which the *Practical Photographer* of 1st August has copied from the *St. Louis Republic*. But this French arrangement, ingenious as it is, will soon, I think, be superseded by Gray's telautograph, which will transmit electrically an accurate drawing of the suspected individual, and so make the description unnecessary.

Mons. Albert Londe, of Paris, exhibited a number of medical photographs made by him under the direction of the physician Charcot at the Salpetriere in Paris.

Turning from France to Germany, my inspection of this exhibit was much facilitated by the excellent special catalogue of the German society for mechanics and optics. The German catalogues were the best, and the American the worst in the exhibition. The new crown and flint glasses of the baryta, phosphate, and borate series, with the objectives for microscope, telescope, and camera made therefrom, were perhaps the greatest attraction.

Zeiss, Voigtlander, Steinheil, Schultze, and Bartels all exhibited their well-known lenses. The last-named firm showed a telephotographic lens designed by Miethe, and Steinheil his own lens for the same purpose, and an instantaneous photographic telescope, as made for the German navy, with a double objective and a negative elongation lens, having an equivalent focus of forty-two inches.

This instrument is only 24 in. long, and gives circular images 2 in. in diameter.

None of these goods are made in America, and the enormous disadvantage at which the American consumer is placed by the tariff may be judged by the fact that for a Clement and Gilmer lens, which costs five pounds in London, eight pounds are asked here.

The German apparatus for projection and photo-micrography, with all their accessories for lighting, etc., were more perfect than any others shown in the World's Fair.

The German Government built a picturesque edifice, the interior of which was almost exclusively devoted to the publishing trade. It included a systematic exhibit of every kind of photographic and photomechanical reproduction, with many of the classic scientific works which Germany has given to photographic literature.

Whilst the French exhibit was most tempting to the buyer of apparatus, that of Germany was by far the most complete and instructive.

In the Austrian department, Lechner, of Vienna, exhibited a phototheodolite, similar to that of Colonel Laussedat, and, like all the other countries, several interesting photographs.

That these fine collections are now to be dispersed is much to be regretted, for the sake of the American people. Most of them would have been purchased if, as was expected, the American Government would have consented to a reduction of import duty on those scientific and educational exhibits which had been sent by foreign countries to the Exhibition. It would have caused no real loss to America in money, and would have brought much intellectual gain.

But at the last moment the Senate decided that there should be no remission on duties, except on goods actually presented to public institutions, and so the articles which would have been most useful here will be returned to Europe.

Midlothian.—On the 27th ult., Mr. W. Thomson, Vice-President, occupied the chair. Mr. H. Marshall, D.Sc., President, gave an interesting paper with demonstrations on bromide enlarging. There was also a limelight exhibition of slides, the work of members and others. It is intended that the members of the club shall undertake a photographic survey of the county of Midlothian at an early date.

Derby.—A meeting was held 21st ult., Mr. R. Keene presiding. The election of officers resulted as follows:—President, Captain W. de W. Abney, R.E., C.B., F.R.S.; Vice-President, Mr. R. Keene; committee, Messrs. A. H. Bennett, C. Bourdin, C. B. Keene, T. Scotton, G. Walker, R. Woods; Treasurer, Mr. A. B. Hamilton; Hon. Secretary, Mr. T. A. Scotton, 9, Church Street, Derby. Mr. S. H. Fry, of London, gave a lecture and demonstration on "Lantern Slide Making." Mr. Fry very clearly explained the various methods of doing this, such as printing in contact with gaslight, printing out by daylight, partially printing out by daylight, and then converting the chloride of silver salts into bromide of silver and developing to the proper density by the ordinary methods, afterwards toning with gold in the usual way, and lastly by means of reduction in the camera. The demonstration throughout was excellent, and was watched with great interest by the large number of members present, and at its conclusion a general discussion took place.

The Art Craze.

By Hyslopian Machus.

A great idea in this world of ours is that if a thing has incurred great trouble and expenditure of time in its production, it must necessarily be a good thing.

At any rate, it is with a modification of this idea that the painter looks down upon the photographer who would dare presume to designate his worthless mechanical productions "works of art."

The painter seems to think that, because he takes as many months as the photographer takes days to complete a picture, his work must be vastly superior.

Our work is half done for us by machinery, is the painter's taunt. This is all very well as far as it goes, but far it does not go. The camera is only a *part*—and, in the hands of an artist, a very small part—of the means to the end.

What could the painter do without his brushes? This, forsooth, is a weak argument, but it is about as strong as the one urged against the camera. Is this contempt of photographers by painters not rather fostered by the latter body than spurned? In one or more of the notices of this year's Pall Mall Exhibition we read that "the growing tendency is to imitate the painter and his methods." Now, can we ever expect a high place in the "fine arts" for our photography—a place which will be recognised even by painters—if we merely aim at imitating the thoughts and methods of these wielders of the brush?

Every artist worth the name has his or her own peculiar style of work and working. Therefore, if we imitate them, do we not display a great lack of originality? Is an engraving (because it possesses the name) such a great and "only" thing in monochrome art as to justify the use of bromide and platinum papers *merely for the purpose of resembling it in appearance?* It would seem so in these days.

There are some people who would adore a picture were it an engraving, but damn it if a platinotype.

Surely the *artist's* business is to represent nature when in her most poetic and pleasure-inspiring moods. How much does it matter, then, which process or agency is employed for so doing? I don't think the camera has yet been introduced which will take upon itself the responsibilities of selection, composition, and arrangement of light and shade. No, this, the *great* part, is left to the artist—the man! Be that man photographer or painter it matters but little, as the rest of the work consists, for the most part, in the exercise of *technical* skill—the painter with his peneil and brushes, the photographer with his camera and solutions.

"Ha!" the painter will argue, "but the photographer's technical skill is contained principally in reducing the details in his picture to needle points." This was true some years ago, but nowadays some of us are apt to forget the operation of focussing altogether. Here, again, we have imitation. Because one class of painters sees an Ayrshire cow and represents it on his canvas as an uncertainty between a house on fire and an advertisement hoarding, surely it does not follow that camerists should stretch their imaginations, their eyeballs, and their consciences in like manner.

Further, is it because *painters* use canvas that some photographers have employed it lately, or has it been used as an experiment, and for ultimate adoption in the event of its proving itself superior to paper, etc.?

If it is an experiment, good and well; if mere imitation—drat it!

To sum up this rhapsodical outburst. Let us not take our impressions of Nature second-hand, by walking precisely in the footsteps of our painter brethren, but let us rather strive at originality in our efforts to raise photography to the enviable and honourable position of a "fine art." In this way our ambitions may be realised. By plagiarism—never!

Brixton and Clapham.—Ordinary meeting, 21st ult. Mr. W. Thomas read a paper on "Skies," which he said could be produced in photography in one of two ways, either by photographing on separate plates for the landscape and sky respectively, or by securing the sky on the same plate as the landscape. He preferred the former method, one advantage being that it was easier to allow the correct exposure for the two portions of the picture. In exposing he uses a Tylar's window shutter, and sets it for the landscape before stopping down the lens, exposing gradually for the foreground and quickly for the sky. Development should be carefully performed, since the sky must be not too dense. A large stock of negatives of skies should be kept, and the greatest care exercised in printing, so that the lighting may be the same as for the landscape, the clouds occupying their correct position. Several specimen prints and negatives were submitted for inspection and generally admired. The methods of printing in clouds in prints, enlargements, and lantern-slides were also fully explained, and several dodges described.

Folkestone Considered as a Photographic Centre.

No town perhaps in the whole of England amongst the fashionable watering-places has grown so much in size or popularity as has Folkestone of late years.

This year of all others its natural attractions were doubly enhanced by the glorious summer. Nor was this unappreciated by brethren of the "black art," though the variety of the photographic subjects found here led one to expect more "camerists." On one occasion, at the departure of the mail boat for Boulogne, as many as seven workers were noticeable. Of these, four used hand-cameras, the other three being content with the steadier "field" apparatus.

The first attraction will no doubt be the "boat"; it makes a charming picture, but is rather a nasty one to get. The mail leaves at noon and arrives at four p.m. The light is best at the departure that time should be chosen if possible.

The best place to stand is on the S.E.R. "penny pier," just where it joins the land, when the boat is leaving the harbour itself; if, however, it leaves the "jetty" it makes but a poor picture, as one has to snap almost end on.

An entertaining picture, full of life and detail, can be made of the passengers embarking; a good view of the scene is to be had from the foot-bridge over the railway. The very minute to snap is just as the crane lifts a van full of luggage in mid-air just before lowering it into the ship.

The harbour must not be neglected, as several views will strike one as being worth taking. Chiefly to be recommended is the one of the "old town" as seen from the lighthouse. This looks very pretty at either low or high tide, but between tides it is not so picturesque. The combination of the dark fishing boats with lightish sails half-mast as they hang drying against the old red-brick houses, produces a charming picture in silver or platinum. A still farther advantage which can be got as a rule by waiting is to catch a smack leaving or entering the harbour, as they do in twos and threes at a time.

A short visit to the fishing quarter itself will repay one for time and trouble. Plenty of subjects are to be found here in the willing folk who live there. Many a good study is made from fish just being landed, of nets being mended, tanned, dried, etc., along with other natural accessories abounding, such as lobster pots, cordage, and all the multifarious gear of the calling.

Our path will soon take us to the beach, and here we shall find all the usual seaside attractions of niggers, "long shore" boatmen, itinerant vendors of novelties, etc. A very few opportunities are given for "boat" studies at the east end of the beach near the station, but nothing else is here worthy of the word picture. A handsome kiosk has just been erected here in the Marine Gardens, where military bands play several days a week.

Continuing our walk along the beach, we come to the Victoria Pier; a small toll of 2d. is charged for admission. No restrictions handicap one here like there used to be at Deal. At noon or later, good views of the beach, East and West, can be secured, but the liveliest time is about 11.30. The most attractive view of the pier itself is found in the prettily laid-out gardens west of the lift; here, with the help of a rustic hut or bridge and some trees, a tasteful study can be registered.

The lifts, by the way, transport one quickly to the Lees—whence a fine view of the whole of the shore can be obtained: for preference the spot to be chosen is just opposite Harvey's statue.

Music is generally going on near here, and if so inclined a good view of the elite of the fashionable world can be got by wheeling round.

A short walk along the Esplanade will take us to the Parish Church. This is charmingly situated, and has a very handsome tower. Early morning, from seven to nine o'clock, is the best time to expose. The right to photograph the interior is reserved.

Many as are the delightful nooks and corners about the Lees and in the neighbourhood of Radnor Park, unless our confrere specially delights in "street views," his energy and plates could be better employed in the neighbourhood.

Few places are so richly provided with excursions. Turning eastwards, the first taken will be to the "Warren," distant some three miles, a charming haunt for artists of camera or palette, and most suitable for pic-nics. On a clear day good views of Dover can be had, or turning homewards, Copt Point shows itself suggestively.

Drives there are in any quantity, and here it may be useful to mention that the roads on the whole are good for cycling, though rather hilly.

Paddlesworth is famous for having the smallest and highest church in Kent. On a clear day one is said to be able to see the smoke of steamers going up the Thames. The situation of the tiny church suggested this verse:—

"Highest church, lowest steeple,
Largest parish, fewest people."

A favourite spot of the antiquarian is the village of Lyminge; the vicar is most courteous, and will do all he can to entertain appreciative visitors. Lympne has its famous castle high over the marshes, and close to it is Westenhanger, the latter being the supposed "Fair Rosamond's Bower."

Passing through the formerly glorious town of Hythe—now, alas! noted only for its church with its crypt full of bones and skulls of early Britons, and for the School of Musketry situated there—we near the Military Canal. This artificial defence for this naturally-exposed coast has become quite a rendezvous for "picture makers." The canal is enclosed by richly timbered banks; as it leaves the town at the west, it becomes most strikingly picturesque.

Our return route takes us through Seabrook and Sandgate, the scene of the recent landslip, having on our left Saltwood Castle. This is famous as being the place where the murderers of Thomas à Becket slept when on their fatal journey to Canterbury. The old "keep" as seen from the southern side is attractive in all the grandeur and dignity of moss-covered walls and ivy-clad turrets.

Shorncliffe Camp lies between ourselves and Folkestone. A morning can be well spent here on purely military subjects. Mention has been made of Dover. Here, with permission, splendid views of one of England's most glorious castles can be obtained. There is not much else to be seen, except in the way of shipping, the docks being generally full of boats. The Admiralty Pier, too, may attract some.

Further away, Deal, Walmer, Sandwich, St. Margaret's, or Canterbury suggest themselves and are well worth visiting, especially the last mentioned place; space must confine one to name them only.

These humble remarks will, it is hoped, give some feeble idea of the photographic wealth of this neighbourhood. If this imperfect sketch should induce any picture-seeker to visit the neighbourhood he will find every convenience, and meet with much helpful advice at 9, Church Street, where a brother amateur does his best to help others. The "Annual" supplies the names of plate sellers and dealers! the sole correction being that one chemist, "Goodliffe," no longer exists.

HOLIDAY IN PERTHSHIRE.

By D. S. F.

I have seen in your excellent paper, dear Mr. Editor, many splendid holiday articles, but am rather astonished that, so far as I remember, Perthshire, which Scott describes as "the fairest portion of the southern kingdom" has not had a place amongst them. These articles have stimulated me to try and write you an account of my holiday in Perthshire. This year my headquarters were at Kenmore, a beautiful little village at the head of Loch Tay. The entrance to Taymouth Castle, the seat of the Marquis of Bredalbane, is at the end of the village, and this no doubt accounts for the primness of the village, which is so beautiful and clean that one is almost afraid to throw down a match or a piece of paper. There is a coach runs from here to Aberfeldy, about six miles, the nearest railway station, and steamers on the Loch. The want of railway communication might have been a disadvantage to some. It was none to me, as my bicycle was my means of conveyance, and a very good means I found it, although I must say it is not a very easy matter to carry a half-plate kit on a bicycle. I have never yet been able to get a really efficient carrier. I, however, did not intend to speak of myself and my wants, and must apologise for doing so.

Two or three plates could be exposed to advantage on Kenmore itself, including the gateway to Taymouth Castle, and as for the Loch, why, as many as you like. From Kenmore bridge the view is perfectly enchanting. Loch Tay, as you are aware, is one of the finest and largest lochs in Scotland and, about half way down, Ben Lawers, I think the third highest mountain in Scotland, rears its majestic head into the clouds. But I do not need to attempt to describe the beauty of any part of this magnificent loch, for the view from one part seems to surpass that from another.

I was a fortnight at Kenmore, but of course, Mr. Editor, if I could describe all the places I visited in that fortnight, as they ought to be described, I fear if you did publish this article, of which I am doubtful, you would publish nothing else in that week's issue. I will therefore only attempt to describe the most interesting.

One day that the roads were not in a fit state for my wheel I took the coach to Aberfeldy. On the coach besides myself there were other three followers of the black art, each with a hand-camera. One of them, an old gentleman, got the coachman to stop till he snapped Taymouth Castle, which, indeed, looked most beautiful through the opening in the trees, although I scarcely thought it was a suitable subject, at least for a hand-camera.

The principal attractions at Aberfeldy are the Falls of Moness, which are certainly worth a few plates. There are three falls, and of course they are described as the finest in Scotland. There is also near the town a very beautiful monument consisting of a cairn surmounted by a highlander, to commemorate the formation of the Black Watch, which took place here in 1739. It is indeed a fine work of art and well worth a couple of plates or more. Another day I took a run of about twenty miles to Dunkeld, a most beautiful little town, with its Cathedral, on the banks of the Tay. Strange to say, you are not allowed to photograph in the grounds of the Cathedral without permission, but you can photograph as much as you like inside it. I would advise any amateurs who intend visiting the Cathedral to get this permission, as I was much disappointed, not being able to get some views of the exterior, which is well worth a plate or two. I, however, exposed one on the inside, another on a very fine mural monument inside the Cathedral, also to the Black Watch, in commemoration of their deeds. At the foot of the inscription are these lines :—

> Here 'mong the hills that nursed each hardy Gael,
> Our votive marble tells the soldier's tale;
> Art's magic power each perished friend recalls,
> And heroes haunt these old Cathedral walls."

I also got some excellent negatives of the lordly Tay and the Cathedral from the opposite bank. Really it is a happy hunting ground for amateurs. Another place I visited was Pitlochry and the Pass of Killiecrankie, also about twenty miles from Kenmore Here I got good views of the well-known soldier's leap, where tradition says a soldier jumped the chasm to escape from his enemies. Every bit of the pass is worth a plate.

I think this will be about as long as you will care for, Mr. Editor, though I may continue at some future time, if you are agreeable.

In conclusion allow me, for the benefit of your cyclist readers, just to say a word in praise of the roads in Perthshire. The splendid condition in which they are kept added in no small degree to the pleasures of my holiday.

Competitions.

	Subject.	Latest Date.	Entry forms to be had from
AM. PHOT. Monthly Lantern Slides	Portraiture	Dec. 14	Printed in weekly issues
AM. PHOT. Holidays with Camera	Photographs taken during holidays.	Dec. 31	Will be printed in paper
Optimus' 100 Guinea Competition	All Classes	Dec. 31	Perken, Son, and Rayment

Cornish (Camera Club).—Annual meeting and supper held on 20th ult. All the officers were re-elected, with thanks for past services.

Barnsley.—On 23rd ult. the members met, the President occupying the chair, and the rules drawn up by the committee were duly passed. The Secretary produced some prize prints. They were passed round and were very much admired. Work was also shown and questions answered by several members.

Leeds—The 20th ult. being the members' lantern night, a large number of slides representing summer outings were thrown upon the screen, contributed by Messrs. Atkinson, Reffit, Butterworth, Rodwell, Walker, Denham, Burrell, Davison, Hampshire, Armstrong, Washington, Teasdale, and Dr. Jacob. Criticisms were invited and questions answered regarding the developer used. Much useful information was elicited. Metol in the hands of Mr. Walker produced excellent results; exposure about one-half, proving that this last friend to the photographer—metol—has come to stay. A very pleasing and interesting evening was spent. The chairman (Mr. J. H. Walker) at the close announced that on December 7th Mr. Godfrey Bingley would give his lecture on his summer rambles, with slide illustrations.

Paisley.—A meeting was held on 14th ult.; the Rev. Mr. Crouch (President) occupied the chair. The Secretary, Mr. Jack, read a paper on bromide printing, and developed prints before the meeting by ferrous oxalate and amidol. He also showed a number of prints finished in different styles and toned with uranium, platinum, and gold. A special meeting took place on the 16th for the purpose of viewing the set of South African slides now in circulation among the photographic societies. The President again occupied the chair, and prefaced the exhibition with a few remarks. The slides were very much admired, and the descriptive notes accompanying them rendered them very interesting.

Reviews.

THE "American Annual and Photographic Times Almanac" for 1894. English agent, Jonathan Fallowfield, 146, Charing Cross Road, W.C. Price 2s.

Once more we have to welcome this annual visitor, and certainly the '94 volume is fully up to its predecessors in literary matter, and in advance of them in its illustrations, the chief of these being a three-colour process-block print by Kurtz, of New York; although possibly not perfect, it is decidedly good. Besides this, there are two prints on aristotype paper, three collotypes, and nineteen half-tone, or process blocks, besides numerous diagrams, etc., in the text.

For the illustrations alone the book is worth the money, and then with the articles and tables, etc., it is good value, and should not be missed.

Black and White Christmas Number.

Although confining its attention, save for the cover and supplement, to black and white illustrations, they are of the same high standard for which this publication is famous. The literary matter has evidently been chosen with the idea of counteracting any tendency to excess of gaiety, as the stories decidedly tend towards creepiness and morbidness.

Apparatus.

TYLAR'S HOT-WATER LINEN BINDING STRIPS.

WM. TYLAR, of 41, High Street, Aston, Birmingham, has sent us samples of the above, which are good. They are of stout linen of the regulation length, and only require wetting with a sponge dipped in hot water, and binding on in the usual way, and the corners cutting out to mitre, and allowed to dry. They hold as tight a possible, and for all slides which have to be shown much they will be a great assistance. Another use to which they can be put is as a temporary means of fixing a print-out opal or lantern slide to a negative.

THE "EVER-READY" POCKET WRITING CASE.

WILLIAMS AND CO., of Hatton Garden, E.C., have introduced two little novelties which are of considerable use to photographers. The first is the "Ever-Ready" writing case, which contains paper and



pencil. This is a pencil case which has a coil of paper inside it, and as much of this can be torn off as required, and then the remainder is ready for the next note. It takes an ordinary lead pencil, and each spool of paper is 24 inches in length, and fresh spools, either plain or gummed paper, may be obtained four for 1d., and, with 6d. for the case complete, it is extremely cheap and a useful addition to one's working materials.



THE RELIABLE BALANCE.

THE same firm also send us one of these, which should be in every dark-room. As will be seen from the diagram, it is a spring balance, and two cards are given, one to weigh from ½ oz. to 4 oz., the other from ¼ oz. to 1 lb. The rates for postage are given on one, and the English and the metric systems on the other. The whole packs into a half-plate box, and costs 1s., or post free 1s. 3d.; with brass or vulcanite scale-pan 1s. 6d. extra.

EASTMAN'S IMPROVED TRANSFEROTYPE PAPER.

The Eastman Photographic Materials Company, of 115, Oxford Street, W., have, we are glad to say, introduced an improved form of their old transferotype paper. It will be remembered that their old paper in time gradually refused to strip, but this difficulty has now been got over, and the new paper, which is coated with exactly the same emulsion as their well-known "Permanent Bromide Paper," should become as great a favourite as the old transferotype. The manipulations of developing, etc., are practically the same as for bromide paper, and the print after fixing and washing is allowed to dry and then soaked in water till soft, squeegeed into contact with the surface it is desired to transfer it to, and placed under a weight to dry thoroughly, or else left for over thirty minutes. After this it is placed in hot water till the paper blisters, when the paper may be stripped off, and the print, after a gentle rubbing, is left in all its beauty.

The applications of this paper are innumerable: lantern slides, opals, window transparencies, plaques, tiles, lamp shades, enlargements on canvas, reversed negatives, etc. Any one who can make a good bromide print can manipulate this. It may be had either in cut sizes—quarter-plate, 10d. per doz.; half-plate, 1s. 9d.; whole-plate, 3s.—or in rolls.

ILFORD MATT P.O.P.

The Britannia Works Company, Limited, of Ilford, have made a step for which, personally, we shall be eternally grateful to them; that is, the introduction of a "Matt P.O.P." This is going to save us a lot of trouble. We shall not now have to answer, we hope, any more questions as to how to obtain a matt surface, and how to mount such prints.

There are a very large number of workers who prefer matt surfaces to the glacé or what is popularly called "boot polish" prints. It is true there have been plain papers in the market, but these have been deficient in one important matter, namely, blocking up of the shadows, and also necessitating really different working. This new matt P.O.P. has all the qualities of the ordinary glazed P.O.P., but a very fine matt surface, which in our hands cannot be got rid of; we have tried burnishing the print, rubbing it, without producing a glaze.

It is toned in exactly the same way as the ordinary Ilford P.O.P., a great advantage, as we shall now be able to obtain glazed or matt prints without any extra trouble. The tones obtainable are, if we may say so, even more pleasing than hitherto attainable, as they range from sepia brown to a rich black, and this without any clogging of the deepest shadows, as the image is entirely on the surface of the paper and not in the fibres, as with ordinary plain paper. We warmly welcome this new addition to our printing processes, which places yet another weapon in the hands of the artistic worker.

We have commenced a series of experiments with the paper, and hope to give the results at an early date, and we would remind our readers if they wish to see how the paper is worked, that Mr. Howson is to give his first demonstration on the same at the Central Club on Friday, December 15th, and as all visitors are welcome there is a good chance for them.

THIO-CARBAMID (HAUFF).

Fuerst Bros., of 17, Philpot Lane, E.C., have sent us a sample of the above, which, as we have already recorded, has been recommended by Drs. Bogisch and R. E. Liesegang for removal of stains and fixing chloride prints. This is very effectual in removing stains, and in our hands has been successful when all other agents have failed. The price is 1s. 6d. per oz. bottle. The salt is in fine white cubical crystals, quite free from odour. The following are the directions for use:—

FOR REMOVING STAINS, DISCOLOURATIONS, AND CLEARING.

It is very often noticed that the gelatine layer of negatives and positives assumes discolorations through the use of certain developers when old fixing solutions are used. This discolouration makes such negatives or positives undesirable. For bromide enlargements, for instance, which are still to a great extent developed with ferrous oxalate, it is necessary to use a special clearing bath to prevent the yellow staining which would invariably take place. To remove these and other stains, this new preparation in acid solution is specially suitable, and has the advantage (whilst leaving the image absolutely untouched) of bringing about a permanent removal of stains or discolourations, which cannot be said of other similar mediums. Its application is as follows.

The negative or paper print (bromide or chloride silver plates and papers) are previously fixed with hypo, and after the hypo has been thoroughly removed by washing, the negative or paper print is put into one of the following solutions until the discolouration or stain has disappeared.

(I.)

Thiocarbamid	300 gr.
Citric acid	150 „
Water	1 qrt.

(II.)

Thiocarbamid	300 gr.
Alum	300 „
Acetic acid	150 „
Water	1 qrt.

The pictures after removal from the solution are thoroughly washed. It is not advisable to immerse the pictures in the solution

unless all the fixing hypo has been removed, as the citric acid decomposes the hypo, and would cause yellow stain.

The above solutions may be used over and over again.

Please note that thiocarbamid does not act in alkaline solution.

For fixing, the following solution is recommended:—

Thiocarbamid	300 gr.
Citric acid	75 „
Water	1 qrt.

This solution can be used for silver chloride negatives, also for collodion, gelatine, and albumen positives, and such diapositives (lantern slides), which contain pure chloride of silver.

For fixing the positives, etc., after some have been toned in an acid bath (not containing fixing hypo), they are immersed for about ten minutes in the above solution, and then washed in a bath of water containing 15 gr. citric acid to 1 qrt. of water. The addition of soda or potash to the solution is not permitted.

The solution is not applicable to fixing of silver bromide negatives, paper or diapositives, which contain, besides chloride of silver, also bromide and iodide of silver.

Societies' Notes.

THE following are the awards of the judges (Colonel Gale and F. P. Cembrano) in the North Middlesex Photographic Society's exhibition of members' work held last week at Jubilee House, Hornsey Rise, N.:—No. 26, "Zingara,' Ernest Spencer; No. 54. "The Footbridge," J. W. Marchant; No. 56, "Reedy Waters," J. H. Avery; No. 102, "Departing Day," A. J. Golding; No. 116, "On the Marshes," A. J. Golding; No. 153, "By Furrow and Hedgerow," J. C. S. Mummery; No. 227, lantern slides, S. E. Wall; No. 229, lantern slides, W. Taylor.

MR. A. BROOKER, of Hastings, will give a lantern lecture to-day, Friday 8th, at 8 p.m., on Winchelsea and Rye. Visitors are welcome at the Central Photographic Club.

Societies' Meetings.

Aston Nat. Hist. and Photographic Soc.—With "Hand and Stand in North Wales" was the subject of a paper read by Dr. Hill Norris. The value of the lecture lay in the description of the various photographic haunts in and around Bettws-y-Coed and Conway. The scenes on the banks of the Llugwy, Lledr, and Conway, which were placed upon the screen, gave a good idea of the land, which in summer teemed with the photographer, and the artist of the brush. The slides were of the highest quality, and were all upon the dry collodion plate.

Cardiff.—The eighth annual meeting was held on 24th ult., the President, C. F. Gooch, Esq., J.P., in the chair. The following officers were elected for the ensuing year:—President: S. W. Allen; Vice-Presidents: Jonas Watson, J.P., Walter Insole, S. W. Allen, M.I.M.E., T. Mansel Franklen, E. H. Bruton, Alex. Kellar, C. F. Gooch, J.P.; Treasurer: G. H. Wills, jun.; Hon. Secretaries: G. H. Bedford and T. H. Faulks, 127, Bute Road; Council: W. H. Kitchen, Fred. Heitzman, Wm. Herbert, Alfred Freke, W. Foster, A. McKinnon, D. B. M'Callum, Wm. Booth, Thos. Forrest, W. Cocks, Rev. A. T. Fryer, W. J. Jenkins, E. Hancock, jun., A. Montgomery. The Secretaries made a report as to the prospective arrangements for the winter session, and it was decided to have a public exhibition of lantern slides in December.

Croydon (Camera Club).—On 29th ult. Mr. Leblanc gave a demonstration of "Modern Developers." A snap-shot negative was satisfactorily developed with metol, and a lively fire of questions ably replied to.

Greenwich.—At the recent meeting of this society, under the chairmanship of Mr. Chas. Churchill, Mr. E. A. Leblanc, on behalf of Messrs. Schwarz and Co., gave a most interesting demonstration of the use of their new developers and cartridges. A couple of Sandell films were successfully developed with metol, the extreme detail brought out by this energetic developer being much appreciated. Lantern slides developed with glycin (which is apparently well adapted to this work and bromide prints with amidol) were also shown, the use of the tone-fixing cartridges being shown on untoned prints provided by the Hon. Secretary. Much interest was evinced also in the new "fixing block" produced by this firm, which it would seem is quite likely to supplant our old friend "unadulterated hypo."

Guildford.—A meeting was held, at which Mr. Bynoe (representing Messrs. R. and J. Beck, Cornhill) gave a lecture on the use of the hand-camera, dealing more particularly with the Frena hand-camera. Mr. Bynoe gave a very lucid description of the uses of the various component parts of the instrument, and explained very fully the reasons for the necessity of using the swing-back. He also described the method of focussing hand-cameras employed by Messrs. Beck, a method which has never before been used for this purpose. When it is desired to alter the focus of the lens a supplementary lens, called a magnifier, is inserted in the aperture, and this has the effect of bringing nearer objects into focus. By this means objects only two feet from the camera can be brought into exact focus. A number of lantern slides, illustrating the work done by the camera, were exhibited, and a hearty vote of thanks to the lecturer brought the proceedings to a close.

Holborn (Camera).—On 1st inst., Mr. J. Britten in the chair, M. S. Herbert Fry gave a very interesting and practical demonstration with the Paget Prize lantern plates, showing very effectively the ease and simplicity with which these plates are worked. On Saturday the club held their fifth annual supper at Anderton's Hotel. Mr. R. D. Lowe occupied the chair, and was supported by a representative number of the members.

Halifax.—On 29th ult. Mr. S. H. Fry gave a demonstration on "Paget Prize Print-out Papers and Lantern Plates." The lecturer in a lucid and interesting way dealt with the characteristics of a good lantern slide firstly, and laid great stress on the importance of exposing correctly and, not as some people try to do, by making the slide right in development. Coming to the question of variation of colours, Mr. Fry requested Mr. Priestley, the manipulator of the lantern, to show about twenty slides all from one negative, but all of different exposures. Not one of the slides was of the same colour all different, some being brick-red, warm tones, purple-black, and other cold tones. Being all developed by the same solution it proves what the lecturer said, that the gradation of colour is due to exposure, and not, as some say, development. One thing Mr. Fry impressed upon the meeting was, that almost the same tone could be got either with the Paget slow or quick lantern plate; in fact, he seemed to think that even an expert could hardly tell the difference. Mr. Fry then developed an under-printed print. The print-out opals can be treated in the same way as the paper. The opinion of most of the members present was that the partial development was most useful. Some excellent prints were shown to the audience, which were much admired.

Kingston-on-Thames.—At a meeting held on 17th ult. it was decided that the membership of the Society be open to all persons interested in photography, whether ladies or gentlemen, and that the annual subscription be half a guinea. Rev. G. I. Swinnerton was appointed President, Dr. Finny (Kenlis, Kingston Hill) Hon. Sec., Mr. Robertson (Hollingbourne, Surbiton) Hon. Treasurer, and the following the Committee:—Mr. C. E. Abney (Kingston Hill), Dr. Cowen (New Malden), Mr. Albert Hill (Surbiton), Mr. Lemarchand (Kingston), Mr. Price (Hampton Wick). The next meeting will be held at the Albany Hall on Friday, December 1st, at 8 p.m.

Leeds (Y.M.C.A.).—An exhibition of lantern slides was held on 1st inst. The limelight lantern was very kindly lent by Mr. W. A. Daniel, who also conducted the exhibition. About 150 slides were shown by its aid on the screen, illustrating picturesque portions of Bridlington, Wensleydale, Ingleton, Morecambe, California, Scotland, Flamborough, Roundhay Park, Adel, Scarborough, Knaresborough, Bolton Woods and Abbey, and many other places. A large amount of amusement was caused by distorted photographs, caused by being taken with wide-angle lenses. The display was highly creditable to those who contributed, amongst whom were Messrs. Willey, Eastwood, Daniel, and Thompson.

Liverpool (A.P.A.).—On 23rd ult. Mr. S. H. Fry gave a practical demonstration on the Paget Company's new printing-out papers; the great advantage claimed being that it was only necessary to partially print out, the full image being developed by after-treatment. The opinion of most of the members present was that the partial development was most useful, especially in the case of opals, where great difficulty is experienced in examining them during printing. Some excellent prints were passed round the audience who found it a difficult matter to say whether they were partially printed out or not.

Newcastle.—The annual meeting was held on the 24th ult., Mr. J. P. Gibson, President, in the chair. The Secretary's report showed the association to be in a flourishing condition, the membership being 155, and the attendance at both outdoor and indoor meetings having greatly exceeded any previous year's. The Treasurer's report showed a small balance in hand. The election of officers resulted as follows:—President, J. Pattison Gibson; Vice-Presidents, M. Auty W. Parry, J. H. Robinson, Lyd. Sawyer; Treasurer, Frederick Park; Secretary, James Brown (31, Market Street, Newcastle-on-Tyne); Assistant Secretary, W. P. Brewis; Council, J. Arnott, J. S. B. Bell, L. E. Cowan, G. Hall, J. J. Kirkwood, Edgar G. Lee, T. O. Mawson

W. G. Snowball, L. Williamson, John Watson. The AMATEUR PHOTOGRAPHER 1893 Prize Slides were afterwards shown on the screen, and many were greatly admired.

SOCIETIES' FIXTURES.

Dec. 7.—LOUGHBOROUGH—Lantern Night, Discussion on Ordinary Work.
,, 7.—LEEDS—Paper, "Beginners' Errors."
,, 8.—HOLBORN—Social Night.
,, 8.—CROYDON (Camera Club)—Lantern Evening.
,, 8.—ASHTON-UNDER-LYNE—Lantern Evening.
,, 11.—N. MIDDLESEX—Technical, and Nomination of Officers.
,, 11.—THE LANTERN SOCIETY—Mr. G. J. Symons, F.R.S., "The Lantern as a Help to Meteorology."
,, 11.—GOLDSMITH'S INSTITUTE—"Amidol, Metol, and Glycin," Messrs. Fuerst Bros.
,, 11.—RICHMOND—"Clouds, their Form and Movements," Mr. Birt Acres.
,, 12.—HACKNEY—Demonstration of Dr. Andresen's Compressed Amidol, Metol, and Toning Cartridges.
,, 12.—W. LONDON—"Irish Life and Scenes," Mr. F. W. Hindley.
,, 12.—HOVE—"The Chemistry of Photography," W. Jago.
,, 12.—BARNSLEY—Mr. O. de Mirimonde on "Hand-camera Work."
Dec. 12.—P.S.G.B.—"The Distribution of the Image in Multiple Films," by S. Herbert Fry. "Observations on the Lumiere-Lippmann Colour Photographs," F. E. Ives.
,, 13.—CROYDON (Camera Club)—Lantern Night.
,, 13.—PHOTOGRAPHIC CLUB—Members' Open Night.
,, 14.—ASTON—"From Gloucester to Land's End," Mr. A. C. Townsend.
,, 14.—DUBLIN (Camera Club)—Members' Question Night.
,, 14.—HULL—Members' Slides.
,, 14.—LIVERPOOL—Annual Meeting.
,, 14.—WALSALL—Amidol Demonstration, by Messrs. Fuerst Bros.
,, 14.—WOOLWICH—"Isochromatic Photography," Mr. W. H. Barnes.
,, 14.—ASHTON-UNDER-LYNE—Lecture on "The Chemistry of Photography," by Mr. S. Sharp.
,, 14.—HUDDERSFIELD—Annual Meeting.
,, 14.—BRADFORD—Lecture by W. Clement Williams on "Marine and Cloud Photography."
,, 15.—LEWISHAM—Lantern Evening, the "A. P." Prize Slides.
,, 15.—SUTTON COLDFIELD—"Lunar Photography," with Lantern Slides, H. Duncalfe.
,, 15.—HOLBORN—Warnerke's Paper on the "Development of Printing-out Papers."
,, 15.—HALIFAX—"Experiences at Knaresboro'." Messrs. Thomson and Raeburn.
,, 15.—LEEDS Y.M.C.A.—Demonstration on "Enlarging," by Mr. W. A. Daniel.

EDITORIAL.

SPECIAL NOTICE.—Letters requiring an answer in this column must be received by the first post on the Tuesday morning prior to publication. The Editor cannot answer letters by post except under exceptional circumstances.

J. B. asks for a formula for citrate of tin which is recommended by Liesegang (see "The Month," AMATEUR PHOTOGRAPHER, Nov. 3rd) for removing stains. Unfortunately, Liesegang does not give any particular strength, but judging from the context it would be a 10 per cent. solution. Probably it would be necessary to make the citrate of tin, and the following may be useful:—Dissolve 225 gr. of tin chloride, known as stannous chloride or tin salt, as used by dyers, in 5 oz. of distilled water, and add to it a solution of 214 gr. of carbonate of soda dissolved in a little water, collect the precipitate and wash well, now dissolve 126 gr. of citric acid in 2 oz. of water, and pour on the precipitate on the filter paper, and pass the solution through repeatedly, till no more is dissolved; the result will be a solution of citrate of tin, which only requires diluting to 5 oz. to be a 10 per cent. solution. Probably thiocarbamide, noticed on p. 387, can be used instead.

BUD.—You do not give us the slightest indication as to what price you will give. Let us know this, and we can help you.

A. H. BRADBURN.—As the '92 "Annual" was published the middle of June, it would not be possible to include in it a reference to June 5th, '92. If you turn to p. 510, June 5th, 1891, you will find our reference is "not somewhat incorrect." The following brief description of photogravure may help you:—Copper plates specially polished for photogravure are bought of the size required, and this is never the exact size of the picture, but of the picture plus the plate mark. They are thoroughly cleaned with ammonia and whitening, washed, and dried. They are now ready for graining, which can be done in two ways, either by Klic's process or by the spray process. The former has in our hands yielded the best results. A dusting box is made; this should be of stout white pine, lined inside with varnished paper, and be provided with a narrow door on one side at the bottom, and also supported on side supports, on which it can revolve axially freely. The door must be filletted so as to include all dust, that is, prevent the dust from coming out. Through the bottom of the box should be driven some 1½ or 2 in. French nails rather close together, the number depending upon the size of plates to be worked; on this, too, depending the size of the box—for 12 by 10 plates a box 30 by 20 by 20 is about right. Having your box ready, put into it about three-quarters of a pound of finely powdered and sifted Syrian asphalt. The quantity of powder, of course, depends upon the size of box. Close the door tight, set the box revolving rapidly on its axles; after it has spun round about eighteen or twenty times, stop it, allow it to remain perfectly still and level, and mechanical means should be provided to secure this, for about three minutes, and then place your copper plate on a sheet of glass. Thus for a 5 by 4 plate, that is a quarter-plate picture, use a whole-plate glass, and open the door of your box and place on the points of the nails, shut the door and allow the whole to remain three minutes, when probably sufficient fine powder will have settled on the copper. Be careful not to disturb this, and, taking hold of the plate by one corner with a watchmaker's vice, heat gently over a spirit flame or small bunsen burner till it blooms (that is, till the resin just melts and adheres to the place), then cool, and it is ready for use. The plate will keep a day or two, or even a week, but after that is apt to give stains. A transparency of the subject is made; a delicate, soft, and full of detail transparency is best, not a hard, chalky thing. From this make a carbon negative by contact, either on standard brown or transparency tissue. Some prefer one, some the other. We swear by the latter. The negative should not be too dense. Transfer this to the grained copper plate, using boiled and cooled water to soak the tissue in first, develop as usual, wash, alum, and dry. The plate is now painted on the edges with resist or black varnish. The best kind is one to be had in Clerkenwell; the address we can find if required. A draughtsman's pen and a straight edge is the best to get the border line of picture, and the back and edges can then be painted in the ordinary way. When resist is dry, the plate is etched in a solution of ferric chloride; and the stronger the solution is the less will be the etching. When etched enough, the plate is well washed with water. We prefer to use a solution of caustic potash to stop the etching action, and, the resist and carbon negative and grain cleaned off, the plate well washed and dried. The plate is heated on a jigger or iron plate, the ink dabbed in, and then the surface cleaned with chalk, and some dirty people use the ball of the thumb to polish with. We do; it acts better than a pad, somehow. The plate is then laid on the bed of a copperplate press, the paper laid on top, and the roller and blanket passed over it, the paper stripped, and the result is a photogravure, sometimes good, sometimes bad. If the latter, the plate sometimes is re-etched in parts, a process we have never yet successfully done, but we only tinker at it in an amateur way. If we can help you further we will.

C. J. M. CHILD, in acknowledging receipt of his medal, says, anent our remarks on slide-making by contact he thinks we are rather hard. We have no intention of being; all we intended to convey was that many of our competitors spoil the composition of the picture by taking a bit out of a quarter-plate, whereas if the whole were reduced it would be good. We have no bias one way or the other, only there are some people who are content to take a bit out of a quarter-plate rather than reduce—and the result is inferior. Our correspondent says—and as he has taken a medal his words are worth reading (he prints by contact, we may add)—"Personally I have marked on my ground-glass square of 2⅞ by 2⅞ which I very rarely use, and an oblong 2⅞ by 2 in. which I nearly always use. In fact, I think this is rather a gain than otherwise, as having such a small picture of course the regulation 5½ in. focus lens acts as a long-focus lens in proportion to it, and as a rule better perspective is the result. In other words, the focal length of the lens is twice the base line of the picture." Quite so, and a very good idea too for picture-making, but don't you know there are a lot of people who, having paid one penny for a quarter-plate, mean to get all they can on their pennyworth, even if they spoil a picture, and as for cutting down a print, why, if the quarter-plate would only print a whole-plate they would not grudge the paper, but as for cutting a bit off or trimming down, they won't hear of it. Look what a waste of plate it is; they have a quarter-plate negative and mean to get a quarter-plate print. But the artist, like our correspondent, wastes half his plate, gets a picture and a medal.

F. G.—"What is the best combined toning and fixing bath for Ilford P.O.P.?" One without lead, alum, or acids, and which is alkaline and does not contain sulphocyanides and is not used too long. We should say such as the following—

Hypo	1 lb.
Bicarbonate of soda	1 oz.
Water	64 ,,

To every 8 oz. of above add 1 gr. of neutral chloride of gold.

CAMDEN.—We send criticism with slides to your secretaries.

GEO. GOSLING finds that using hypo and ferridcyanide of potassium as a local reducer it soon loses its power, and asks for an improved formula, which can be used with a brush. The best reducer is undoubtedly Belitzski's. This keeps its power much longer than the old ferridcyanide. The formula is:—

Potassium ferric oxalate	15 parts.
Sodium sulphite	15 ,,
Oxalic acid	5 ,,
Hyposulphite of soda	75 ,,
Distilled water	300 ,,

Dissolve the ferric oxalate and sulphite in the water and add the oxalic acid, and shake till the blood-red solution turns a brilliant green. Decant from any undissolved oxalic acid, add the hypo, shake till dissolved. This will keep for some months and turns yellow and orange when exhausted, but may be used over and over again.

CÆSAR.—(1) We are afraid not. It is rather difficult to answer such a question, but the two bronze medal sets were very good. (2) No, certainly not. These slides are barred from competing again. (3) Yes, there is no objection to this. (4) Yes, ovals will do.

A. W. B.—We are afraid you must look on your money as matter expended for the sake of experience. The Company named in your letter have gone away, and yours is not the only complaint we have had. We should advise you to place the matter in the hands of the police at Scotland Yard, who may help you.

O. T.—The reason of your skies being so dark in the prints is that you have over-exposed or else insufficiently developed. Judging from the prints, we should say there was good gradation in the negatives, and they only required intensifying to give good prints. Yes, interiors of churches and houses are admissible in our "Photography at Home" Competition.

W. H. R. BRUSH.—(1) Over-printed and over-toned. We should say the negative was thin and wanted intensifying. (2) Ditto. (3) Too much foreground and unequal density apparent. The left hand is much darker than the right. (4) Ditto. (5) Under-exposed and too black and heavy. (6) The right hand far lighter than the left. This is apparent in two or three prints. What is the reason—fog, or unequal development, or what? This is very uninteresting and slightly under-exposed. (7) Too much foreground. (8) Over-toned; unequal patches again. (9) Far too much foreground. You attempt too much; little bits pay. (10) Plate should have been backed and an isochromatic plate and yellow screen used for this. (11) About the best so far, though it is not artistic. (12) Too much foreground and over-toned. (13) A good thing spoilt by the bit of viaduct and the eyeless house. (14) Over-toned, and the effect is rather took striking to be pretty.

JUNIOR sends us a bit of a film and a print from a negative of an interior which has a circular patch in it. We are unable to determine whether this patch is central or not, as only bits of the print and film are sent. If central, it may justly be ascribed to a flare-spot, but if not central, then it would be better to call it a "ghost." It can hardly be ascribed to the lens, unless, of course, it always makes its appearance. The subject is so trying that we should not be surprised if anything happened.

ROUMANIA asks (1) whether prints for our "Holidays with the Camera" Competition have to be mounted singly or in sets. Just as you please; as long as the prints are mounted and numbered it is immaterial whether there be one on a mount or twelve on a mount as long as twelve pictures only are sent in. (2) Wants some lessons in retouching. (3) Are there any good classes on photography? (4) Are all the photographic exhibitions over? Good classes in all branches of photography are held at the Polytechnic, Regent Street; the Birkbeck, Chancery Lane; the People's Palace, Mile End Road; and at each and all special classes are held in retouching. There are now no more photographic exhibitions in London.

L. R.—(1) In the management of a bunial lantern with blow-through jet, how do you regulate the flow of the hydrogen; at the jet or at the tap; and is either of them turned full on? Some operators regulate at the tap, but we prefer to do this at the jet, so that if necessary during the show more hydrogen may be turned on. (2) How do you regulate the oxygen; at the regulator or at the jet; is either turned full on? Turn the jet tap full on and regulate at the cylinder.

(3) How much is the bye-pass turned on? Light the hydrogen in both lanterns, then adjust the bye-pass so that it will give a flame about half an inch in the one lantern; then regulate the other in the same way. The oxygen bye-pass must be manipulated so as just to furnish enough oxygen to tinge the hydrogen flame; if this is not done when the dissolver is turned, the flame will go out with a crack.

G. E. M.—The advantage of A is that you have an aperture of *f*/5·6, whereas B has an aperture of *f*/7·7, therefore with full aperture A is nearly double as rapid as B. On the other hand, you must remember that *f*/5·6 is only useful for portraiture, and that at smaller apertures B has far better covering power. In fact, it comes to this, that using the lenses for landscape and architecture and general all-round work B would probably prove more than twice as rapid as A, because the latter would have to be stopped down more to obtain the same covering power.

C. K. H.—(1) Yes, we shall be pleased to criticise prints for you. (2) In the Ilford "Manual" a formula for intensification is given, and ammonia or a ferrous-oxalate developer suggested to blacken it. Can hydroquinone be used? Certainly, any developer can be used, but the action is not quite the same, but this we need hardly enter into. (3) Which do you consider the best paper, P.O.P. or albumenised? We should say P.O.P. most decidedly. (4) Which developer will give me the best results in landscape work—hydrokinone, hydrokinone and eikonogen, amidol or metol. This is a very difficult question to answer, and would depend to a great extent on the user. We are loth to recommend one in particular, but for preference try metol. (5) What are the chief points to be observed in cold-bath platinotype printing? The main point is, keep your paper and printing-frame pad free from damp. Do not print too deep and keep your developer in the dark, and don't use too harsh negatives. (6) A print squeegeed to a ferrotype plate will not strip or come off with simple washing. How can it be got off? This print is lost for good, and the best way to get it off is to tear off all you can and then apply a little glacial acetic acid or else soak it in water till thoroughly soft and rub off with the fingers. (7) Suppose the focal length of a lens is 5½ in., does that mean that if the lens be screwed on a camera 5½ in. from the ground-glass, all objects outside a certain distance will be in focus? The focal length of a lens is that point at which parallel rays of light from any object converge and form a distinct image of that object, and when the lens is working at its equivalent focus all objects beyond certain distances are in focus; this varies with the apertnre. The point to measure the focal length from varies with nearly all lenses. In a rectilinear or doublet, it is about the diaphragm slot; with a single lens it is anywhere between the outer surface of lens and diaphragm. The best way to find the position for lens is to screw on camera and focus the sun, moon, or clouds. (8) Which is the best developer for portraiture with ordinary plates? We should strongly recommend metol for this. (9) Is there any noticeable difference in the colour of an Eastman extra rapid bromide paper and the slow? A good deal depends upon the method of working, but it is quite possible to get prints of the same tone. In ordinary work the rapid would give a slightly greyer tone. (10) What would be the relative exposure to make in an ordinary magic-lantern with a moderate negative and middling light, from a quarter plate to a plate photo? This is unintelligible to us. If you are referring to an enlargement, you had better try with a few small pieces of paper. As your data are so indefinite, we cannot help you. (11) Is the gloss of a burnished print on P.O.P. inferior to the gloss given by squeegeeing? Yes, certainly. (12) Could you tell me the price of a cheap enlarging lantern for quarter-plate negatives? It is not possible to obtain a very cheap one. Write to our various advertisers for price lists.

W. W. H. sends a bromide print on paper two years old, with a curious mottling, and asks whether it is due to age. Amidol was used as a developer. We cannot say definitely, but would advise a sheet being tried with the normal ferrous-oxalate developer. If the same marks appear then, they are due to the paper; if not, they are due to the developer.

W. A. H.—We should choose No. 1 set.

F. PARTRIDGE has been using dry pyro and the American standard accelerator, and wishes to know whether a sulphite solution of pyro will give better results, especially as regards density and contrast. We cannot say that the sulphite and pyro will give better results; there will probably be more contrast, because the shadows will be clearer, but, personally, we should continue to use dry pyro.

HOWARD DALE.—We write you by post, or can you call?

E. HOWELL.—Shall be glad to see photo-micrographs, with note on exposure, etc.

AREMAC asks how to obtain a grey tone similar to platinum on Paget print-out opals. This is, we should say, rather a difficult matter, but would suggest that the only way to do it would be to convert the image into bromide, and then develop with ferrous oxalate. We have not tried this, but it might answer. Print till all the details are visible, then soak for at least twenty minutes in a 20 per cent. solution of potassium bromide, wash thoroughly, and develop with ferrous oxalate.

WEXFORDIAN asks how titles are put on landscapes, etc. There are several ways of doing this, and special india-rubber type, etc., is sold by Gray, 44, Snow Hill, E.C. This is called "Name-it," and the title is set up in a special holder, then clamped and inked, the impression taken on a thin film, and dusted with a special powder, and then laid on the negative and rubbed down. This is very satisfactory. Another method would be to use ordinary rubber type, and an ink composed of iodine, iodide of potassium, gum arabic, and glycerine, and stamp with this direct on to any dark portion of a print, when it would bleach the image, which should be fixed again.

JAY HAY asks what quantity of washing soda will replace pure carbonate of soda in the formula for making citrate of soda. Unfortunately, washing soda is an unknown quantity, which may and does contain a variable amount of water. It is far better to use the crystallised sodium carbonate, which only costs 6d. per lb. For making the citrate of soda, you can use bicarbonate of soda if you like, and if you do, 84 gr. of the bicarbonate are equal to 286 of the carbonate. This correspondent notices a mouldy growth in citrate of ammonia after keeping some weeks, and asks whether 10 gr. of salicylic acid will keep it. The mould is a fungoid mycelium due to the nitrogen, etc., which always grows in citrate solutions. Salicylic acid or, better still, carbolic acid, will keep it longer.

W. A. R. sends us a film negative, and wants to know how to improve it; he says it was over-exposed with 5 sec. exposure at 8 a.m. in July, dull, cloudy morning. This is a clear case for intensification. Either use the uranium intensifier or else bleach with mercury, wash well, and then blacken in ammonia, or redevelop with ferrous oxalate; if the latter is used and a print be taken from it, if not dense enough the operation can be repeated.

CORTEX sends us an illustration which gained a prize in a lay contemporary, which represents part of the deck of a Cunarder in a heavy swell, the horizon being at an angle of about 25 deg., and asks us whether we should consider it well taken? Does he mean the negative or prize. If the former, we should say not, and our judges certainly would have thrown this out. But possibly the operator was suffering from *mal de mer*; if so, we can forgive him, because most things seem angular then, but the judges should have known better.

E. W. HARRISON has bought some eikonogen cartridges amongst a lot of other stuff, and wants to know how to use them, the directions being in German. Unfortunately, we cannot read German a long way off, but, speaking from memory, the cartridges have to be broken, and the contents dissolved in 7 oz. of water, when a one-solution developer ready for use is obtained.

C. HALL, referring to an article by Captain Abney, suggesting making pictures on the Embankment in a winter's afternoon when the gas lamps have just been lit, asks how to do it. We have long had a desire to get a picture of the Houses of Parliament from the other side of the river, showing all the windows lighted up and the reflections in the water, but work has prevented us from attempting it. We should first of all use rapid isochromatic plates, give them a heavy backing of caramel and burnt sienna, and go down to the place late in the afternoon; give rather a full exposure, cap the lens, close the slide, and then pore upon the brook that bubbles by for an hour or two, till the house was lit up, and then give an exposure of about ten seconds on the same plate without shifting the camera in any way, and trust that the result would be all right. We might add we should prefer to choose a warm, dry night for the work. To take the picture, Captain Abney suggests we should use backed iso. plates, and give a full exposure and develop very carefully. This must be, of course, a matter of experiment, but we think it possible to do it.

H. S. H.—In No. 1 there is a little too much top light, and the face on the right-hand side is too dark and wants retouching. No. 2 is good, although just a trifle heavy round underneath the chin.

F. MOON-CARDWELL asks how to form an amateur photographic society. First of all strike out the word amateur; make it open to professionals. Get some local big-wig, the Mayor, etc., to interest himself in it. Write two or three letters to the local paper; if somebody else will back the idea up, so much the better. Call a meeting, having canvassed everybody you know to be a photographer; put a good man in the chair, and start with a resolution to form a society. Discuss the subscription, which may be from 5s. to 21s. per annum; get the reporter of the local paper, or else send in full report—people like to see their names in print; appoint committee to consider rules, which, when framed, print, or typewrite, and send to intending members; call a special meeting to pass these: appoint your officers, and then start the society by giving a public lantern exhibition free; give one to the workhouse inmates, or at the hospital. We can lend you lantern and slides. We will send you on copies of one or two sets of rules. The great thing is to have a good Secretary—one who can work, talk, cajole, frighten, and bounce well and—then the thing is likely to go, especially if you keep it well before the public.

BADGER.—We have no intention at present of adopting the plan you do not like.

KROC says he has pasted some prints in an album, and they are beginning to fade from defective washing; can they be removed, and is there danger in pasting fresh ones where the faded ones were? It is quite possible that the album may be at fault; perhaps the leaves are not free from "antichlor," or hypo, which is sometimes used in making paper. Anyhow it would not be safe to paste fresh prints in the place of the faded ones, because if hypo was left in the prints it would be partially absorbed by the damp card when mounted. Cut the leaves out, leaving a little guard, and paste fresh ones in. (2) In copying from photo the image appears on ground-glass, but not sharp, then using a focussing-glass no image is seen at all; there is no difficulty in seeing the image when taking a portrait. It is a little difficult to give assistance in this case, as the data are rather meagre. We would first of all suggest that possibly the camera will not rack out far enough to give a sharp image. Secondly, that not being able to see with the focussing-glass is probably due to the want of light. The best thing to do is to mark the centre of the ground-glass with a cross in black lead, then oil the screen by rubbing a little oil on it with the tip of the finger, making about an inch circle. Then by using the glass, so that the lead cross is sharply focussed, there ought to be no difficulty in seeing the image. In using a focussing magnifier the great difficulty is to get the eyes focussed for the plane of the ground-glass and keep them so.

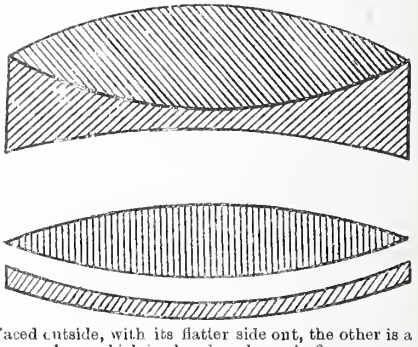
H. G. W.—You will find full formulæ on p. 284, AMATEUR PHOTOGRAPHER, Oct. 27, 1893. The solutions may be used over and over again till they work too slow.

R. FARMER.—Many thanks for letter. We shall print next week, as we must get blocks drawn to illustrate it.

W. W. H.—The slides you send are interesting as evidences of very curved field of a lens. No. 2 is under exposed, but No. 1 is all right. Use a rapid rectilinear lens, only stop it down to give you sharp definition.

ASHTON.—See note on Thiocarbamid, this issue, p. 387.

AMATEUR asks (1) "What difference is there in the look of a print taken from a wet negative and a dry?" Generally speaking there is more contrast, and a peculiar pluck or bloom, the old workers say, which gelatine cannot give. We should say that it is a fallacy. Gelatine plates will give, as a rule, truer rendering than wet plates. (2) "Is there more skill required for wet plates? Can you get greater contrasts? Is it cheaper, and can I make a dry-plate slide into a wet plate?" The process is cheaper; it will give more contrasts, and a slide can be converted, but there are so many pitfalls in the wet process that we should not recommend it. (3) "I have a French portrait lens. Is the back combination right? It is like No. 1, or did it ought to be like No. 2?" We are sorry, but we can make neither head nor tail of your sketches. We can only repeat our information of last week more plainly. The back combination of a portrait lens consists of two glasses, one a double convex, that is, both sides are curved out so that they bulge out, as in figure; this is



placed outside, with its flatter side out, the other is a concave lens, which is placed as shown in figure.

J. N. D. sends us two enlargements developed with ferrous oxalate, with a very small proportion of iron, and wants to know why they are muddy, wanting in vigour and sharpness. Want of sharpness is due to not focussing sharply enough, the muddiness and want of vigour is due to over-exposure, the use of too little iron and too little bromide. Reduce the exposure a little, and increase the iron and bromide.

C. COLLETT.—Many thanks for prints.

W. I. FARMER, asks (1) "Should the paper be sized for Pizzighelli's printing-out paper?" Yes; it is advisable to give it a fairly strong coating of size, so as to prevent the solution from sinking into the fibres of paper. (2) No. 7 solution gives brown black rather warmer than 6. (3) "Of what is the acidified fixing bath composed?" The acid bath for platinum paper is hydrochloric acid 1 oz., water 60 oz. Place the print direct in this after development, and leave for five or ten minutes, keeping it on the move, give it three soakings in three fresh baths, or till the drainings are free from colour. (5) "Is the process permanent?" Yes, this image is in platinum, and therefore permanent.

The Amateur Photographer

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Offices. 1, Creed Lane, Ludgate Hill, London, E.C.

No. 480. Vol XVIII.] FRIDAY, DECEMBER 15, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday morning's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received by the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed in the paper, and competitors must send in all the forms with their lantern slides.

An international sporting exhibition is to be held at Amsterdam from February 10th to 24th, 1894, and a special class is set apart for sporting photographs. This class is divided into two sections—(*a*) for amateurs, (*b*) for professionals. The charge for wall space is 3·60 f. per square meter, with a considerable reduction for larger spaces. Full information may be obtained from Herr Hendrik Groote, 43, Kalverstraat, Amsterdam.

We have heard before of an American arrangement for photographing thieves, and, according to the *Chicago Sunday Times*, this has actually been used. For some time (so it is said) a firm missed money from the till, and it was found that the night watchman had admitted some small boys when he was going his rounds, and suspicion was fastened on these boys.

A camera was arranged to include the desk and till, and electric connection made with the Edison's Company's plant to operate the device. A burglar alarm device was fitted to the till drawer, so that when it was opened the electric connection was made, a flashlight ignited, the shutter released, and an exposure made.

When the boys were arrested and confronted with the photographs, they confessed, and said they thought when the flashlight was ignited their hour had come, but concluded to stand their ground and rifled the till.

Justice has been also pressing photography into her service this side of the Channel, for at Plymouth two pickpockets were caught, and to prove previous convictions against them they were photographed. One submitted quietly, but the other fought, and was finally handcuffed to a fixture, and after half an hour a snap-shot was secured of him, with his eyes shut, making a hideous grimace, and with several pairs of hands firmly fixed in his hair.

We have received the announcement of a forthcoming accession to the ranks of the photographic journals. Mr. H. Snowden Ward promises by the middle of January the first number of his new magazine, the *Photogram*. It is to be a monthly of high class, with fine illustrations, such as silver prints, platinotypes, photogravures, collotypes, Woodburytypes, etc., and the reading matter will be of photography generally, and photo-mechanical work. The price is to be threepence.

From all appearances the magazine is likely to be a success. A high-class monthly, such as the *Photogram* promises to

be could be made well worth reading, and with the energy which characterised Mr. H. Snowden Ward during his editorship of the *Practical Photographer*, there is little doubt he will fulfil every promise. We wish him and his new venture every success.

IN England we are exceptionally badly off in the matter of monthly magazines treating of photography. And we have not one which can rank near the *Photographische Correspondenz* of Vienna, which is certainly the best of all photographic journals.

HERE is a tip for our readers. The Marlborough Photographic Society gave an entertainment with lantern-slides of "snap-shots" of Marlborough life, and it turned out such a big success that it is to be repeated. A hint that well-known residents might find themselves unexpectedly portrayed brought a large audience. The idea is well worth taking up by other societies.

HUMAN nature is such that we rejoice to see caricatures of our friends and acquaintances, and even if we ourselves are landed in the same boat any feeling of pique is at once destroyed by the consolation that others are in the same boat.

TO-NIGHT (Friday, December 15th) Mr. Howson is to demonstrate the method of working of the new matt P.O.P., at the Central Photographic Club, when visitors of all kinds will be welcome. We have been experimenting with the paper the last few days, and hope to give the result of our trials with the report of Mr. Howson's lecture next week.

HOW much depends upon a thorough hard-working secretary in a photographic society only those who have anything to do with the inner working of a society know. At the last meeting a presentation was made of a purse of gold, a silver inkstand, and an album to Mr. Edgar G. Lee, the late Hon. Sec. of the Newcastle and Northern Counties Association, who for six years has been its secretary and raised the membership from 40 to 160. Mr. Lee evidently believes in doing well whatever he undertakes, and he has become a specialist and one of the most successful of all lantern slide makers.

ON the 20th inst. closes the Optimus 100 Guinea Competition. There are nine classes, with £5 and £10 worth of apparatus as prizes. Entry forms and full particulars may be had from Perken, Son, and Rayment, 99, Hatton Garden, E.C.

Flotsam and Jetsam.

EVERYONE is more or less colour-blind. It is merely a question of degree. A man may have passed the Board of Trade test, and a woman may be infallible as to colours—in fact, she generally is—but that is not all. Beyond the range of the colours we know there are others which we do not know, and to which we are blind.

TAKE the spectra of the stars, for instance, as exhibited in such lectures as that by Sir Robert Ball, on which we commented last week. The ordinary human eye can perceive all the gradations of colour in the spectrum from the red extreme to the deep violet extreme, but beyond them it cannot go.

AND yet the photographs of these stellar spectra show us that they do extend beyond these extremes, and that there are other kinds of light which we have not the power to perceive. Our visual endowment is not sufficient. But the camera comes to the aid of the scientist and of the astronomer and shows that they exist.

HERE is one remarkable instance of the capacity of the camera to see characters of light which the human eye cannot see. And other strange and amusing instances may be given. There is, for example, the old tale of the photographer who, in developing a plate after taking a lady sitter, found to his amazement that there were spots on the negative.

THEY fell, too, on the lady's face, which they queerly disfigured. On enquiring at her house the next day for the purpose of asking another sitting, it was found that she was down with the measles!

AGAIN, a photograph was taken in Dublin of the *Great Eastern* just before she was broken up. When the plate was developed great staring letters advertising somebody's patent something or other appeared on the ship's side, though they were not visible to any ordinary observer of the vessel, even after careful scrutiny. Eventually it was discovered that these letters had been put on as an advertisement, and afterwards painted out with tar. But the camera took them, even through the tar.

THUS, in some things, wonderful instrument as is the human eye, it is surpassed in delicacy and sensitiveness by the photographic plate, and, as in the case of the stars invisible to the eye, in patience too.

THE *British Weekly*, enterprising as ever, is letting its readers into all manner of secrets as to how to earn a living in London. The latest interview on the subject is with a well-known photographic publisher, and is full of interest, even to those not consumed with anxiety to earn their bread and cheese.

THE sale of their photographs acts as a kind of barometer of the popular status of peers and pugilists, politicians and parsons, authors and actresses, *danseuses* and *divorcees*, and notables and celebrities of every kind and degree. It is significant, for instance, to learn that the Bishop of Ripon is not selling so well as he used, whereas Canon Scott Holland commands a better market every year.

THE value of this barometer, however, is somewhat limited by the fact that the West End and the Strand are the great centres for the sale of photographs. It is only the well to do public that buys them, unless the penny barrows are to be taken into account, and they never seem much troubled by customers.

IN the last issue of its Photographic Jottings, the *Glasgow Evening Times* published a print of a moonlight photograph taken at Rothesay during October. Rothesay must have propitiated the man in the moon somehow, for though in a recent attempt at a similar photograph close to London, with the same kind of plate, Ilford isochromatic medium, and a long exposure, nearly three hours, as against two hours and ten minutes, the only result was a dismal failure. It seems only reasonable to lay the blame on the moon. ANCHORITE.

East London.—On 28th ult., Mr. C. Tylee in the chair, Mr. G. E. Bennett, of 43, Mitchell Street, Bartholomew Square, was elected Hon. Assistant Secretary. Mr. M. A. Wilkinson in a few but effective words drew the members' attention to the great distinction which the Society had, through one of their members, achieved at the Stanley Show. He referred to Mr. C. Tylee, who had been the winner of the medal for the best individual picture in the Society's competition.

PHOTOGRAPHY WITH MAGNESIUM.

We now come to a series of lamps which are practically magazine lamps. Fig. 15 is the Optimus. In this, as will be seen, is a small india-rubber air pump, the larger balloon being charged with air, the tube beyond being nipped by a wooden clamp, the fingers, or other device. The tall circular chamber is filled with magnesium powder, and the projecting part, which contains asbestos, is filled with methylated spirit and lighted. On releasing the india-rubber tube the air from the big balloon escapes and forces the magnesium through a narrow aperture and through the middle of the flame. A long flash is thus obtained; if a continuous light is required, the smaller ball must be continually pressed so as to keep up the supply of air and the pressure.

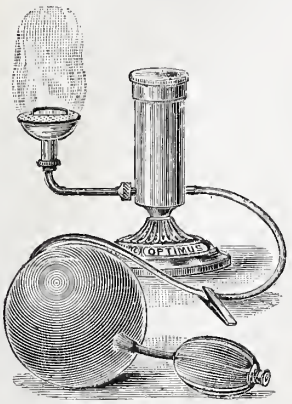


Fig. 15.—The Optimus Magazine Lamp.

The Todd-Forret lamp, shown in fig. 16, is constructed with a similar air-pump, but the magnesium is placed in the wooden chamber below the reservoir for methylated spirit. The manner of using is exactly the same as with the above.

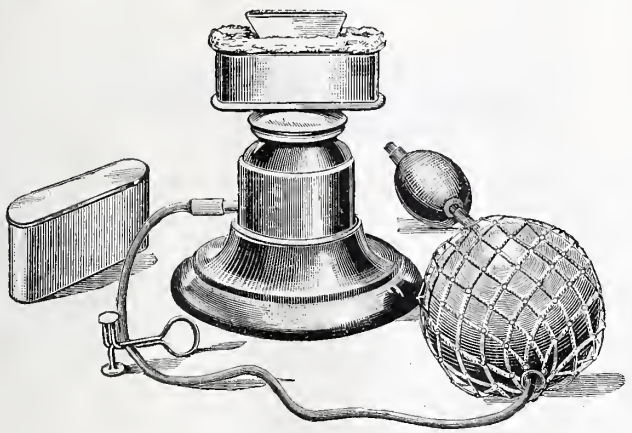


Fig. 16.—Baird's Todd-Forret Lamp.

There is one caution which should be observed, and that is that no methylated spirit is allowed to get down the aperture whence the magnesium issues, or else the same gets blocked and the light fails. This applies to every lamp with a central aperture surrounded by a spirit burner.

Fig. 17 represents Adams' repeating flash-lamp, which holds about two dozen charges without refilling. Fig. 18 represents the Optimus repeating lamp. In both these the small projection at the end below the metal tube is a spring which, on being pulled, allows one charge to pass into the discharging chamber, whence it is blown through the flame.

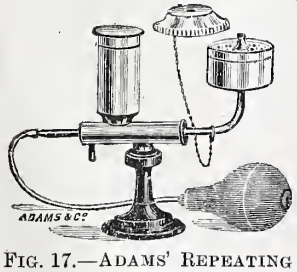


Fig. 17.—Adams' Repeating Flash-Lamp.

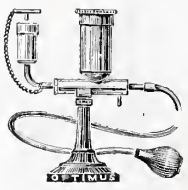


Fig. 18.—The Optimus Repeating Lamp.

In Hart's No. 1 lamp, fig. 19, the magnesium is put into the hopper by means of a special spoon after the small stopper is removed, this latter being used to prevent foreign matter getting into the funnel. The stopper is then removed and the powder blown through the flames, the lamps being arranged so that the

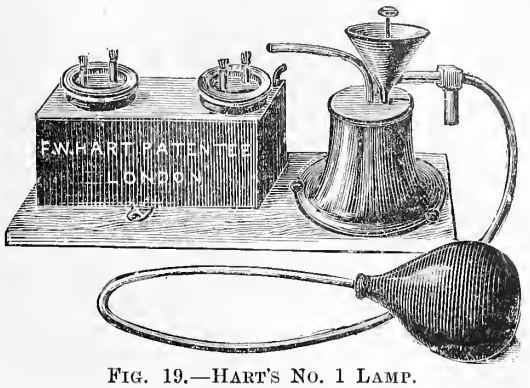


Fig. 19.—Hart's No. 1 Lamp.

powder passes between the burners thus — o o —. Hart's No. 2 lamp is shown in fig. 20. This has an automatic measuring feed for about fifty flashes, or the light can be produced practically continuously.

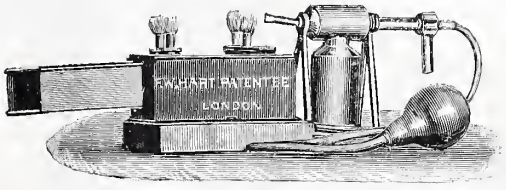


Fig. 20.—Hart's No. 2 Lamp.

In fig. 21 is shown Humphery's oxy-magnesium lamp, in which common gas charged with magnesium powder is blown through a ring-shaped burner, so as to give a hollow, cylindrical flame in contact inside and outside with oxygen, practically a modification of the blow-through jet. The lamp is here shown in section. H is the tap of the house gas supply, which is led into the hollow oval chamber, at the bottom of which is the magnesium M. O is the tap of the oxygen supply, which is led by the tubes O O, O O inside and outside the hydrogen flame. The actinic power of the light is stated by Abney to be increased about twelve times by burning in oxygen.

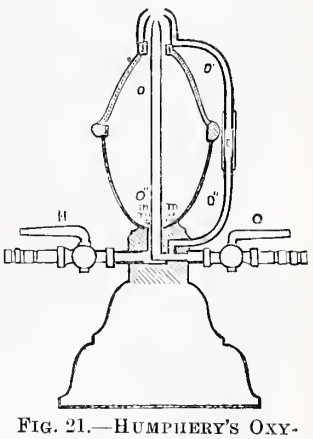


Fig. 21.—Humphery's Oxy-Magnesium Lamp.

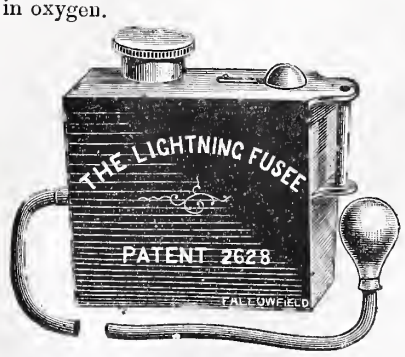


Fig. 22.—Fallowfield's Lightning Fusee Lamp.

Fallowfield's lightning fusee lamp is shown in fig. 22. To use this, the metal cap on top is unscrewed and the lamp filled with powder. The cap is replaced, and a fusee inserted in the holder at the side, and the small metal cover being pushed on one side, the fusee is ignited by rubbing an ordinary match-box along it in a downward direction; as soon as it is well alight the ball is pressed and the magnesium ignited.

Letters to the Editor.

THREE-COLOUR TYPOGRAPHIC PRINTING.

SIR,—In your issue of the 8th inst. you publish a letter from a well-known specialist dealing with the new three-colour typographic printing process, and as we are much interested in this development, will you allow us to say a word with reference to the matter?

Enclosed is a proof of fruit piece in colours worked from three plates, as certified. This was recently printed at our works, and issued as a supplement to the *British Printer*, and thus the latter portion of the letter referred to has caused us some surprise. Your correspondent states that "the only difficulty is in the printing, and that difficulty is so great that ordinary machinery, inks, and pressmen cannot meet it for commercial purposes."

Well, our experience shows that ordinary machines and pressmen have produced most satisfactory results, as is evidenced in the specimen forwarded, and which we leave to your own judgment. There was no special difficulty in printing the plates, no more than is presented with the average process block, and only ordinary inks were used, though admirable inks specially prepared for the purpose have since been placed on the market.

Early next year we hope to give further specimens of this class of work, which we feel sure has a most successful future before it.

By the way, when a specialist like your correspondent admits a complete knowledge and mastery of the method, does it not appear regrettable that the information should not be practically utilised by engravers at home?—Yours, etc.

JOSEPH C. LAWRENCE
(Pro Raithby, Lawrence and Co., Ltd.)

The Montfort Press, Green Street,
Leicester, December 8th, 1893.

[The illustration sent us is a fine example of colour printing, but as to the truthfulness of the reproduction of the colours, not having the original we cannot, of course, speak.—ED. *A.P.*]

* * * *

DEVELOPING P.O.P.

SIR,—Would you kindly find me space in your valuable columns for the following developer for print-out paper (Ilford) which I have been using since the week following the appearance of Mr. Warnerke's gallic acid developer with success. The constituents of the developer are—

STOCK SOLUTION.

Hydroquinone	1 dr.
Soda bicarbonate...	2 „
Acetic acid	3 „
Water	5 oz.

For use take—

Stock solution	1 oz.
Water	5 „

Print until a faint image is just visible, then develop up the image until the darkest shadows turn from yellow to black, then place in water in which a pinch of common salt has been dissolved until all is ready for toning, then tone in the following combined toning and fixing bath, which is that recommended by Mr. Warnerke, which is composed of

Water	1,000 parts.
Hyposulphite of soda	100 „
Acetate of lead	10 „
Chloride of gold (1 per cent solution) ...	20 „

As I have not tried it for any other brand of paper except Ilford, I cannot recommend it for any except Ilford P.O.P.—I remain, yours, etc.,

THOMAS FOSTER.

* * * *

THE BRISTOL EXHIBITION.

SIR,—I am sure it would interest some of your readers to learn what the real point at issue is between Mr. H. P. Robinson and the Bristol Exhibition. If the said exhibition is held in conformity with the rules which the conference of judges agreed upon, what has Mr. Robinson to complain of? If it does not so conform, how is it that the name of Mr. Valentine Blanchard, one of the signatories to the Conference rules, appears on the list of judges?—Yours, etc.,

F. J. TOLLIE.

* * * *

FIRE AT THEOBALD'S.

SIR,—With regard to the fire which destroyed our premises, December 4th, at 43, Farringdon Road, will you kindly permit us to state, through the medium of your paper, that we have taken temporary premises at No. 19, Farringdon Road, and that this place is already stocked with goods from our two warehouses at Kensington and Clerkenwell, and business is not in any way interfered with. As hundreds of our customers imagine they cannot now obtain goods, we wish to say orders are promptly executed the same as usual.—Yours faithfully,

J. THEOBALD AND COMPANY.

Plate Holder for Amateurs.

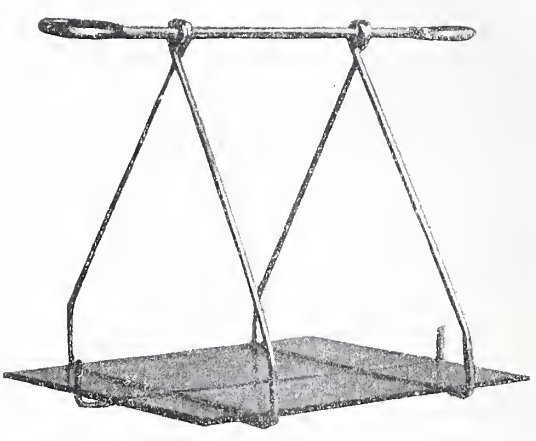
BY F. R. CRINSE, M.D.

TWO of the best developers, pyro and metol, have the disadvantage of deeply staining the fingers of the manipulator, and the strong alkaline solutions injure the nails greatly. For these reasons amateurs, especially ladies, require a holder for the plate during development, which will secure it from a fall, allow of its being held up to the ruby light as required, and at the same time save the fingers of the operator from immersion in the solutions.

Having tried several plate-holders, I was dissatisfied with them, and hence devised one myself. I have found it to work perfectly, and so have those to whom I gave it.

I now venture to publish a description, with an accompanying illustration.

My holder consists of a light frame made of brass wire, thinly



plated with silver. It can be made for any sized plate, and is of very trifling cost.

A glance at the cut will show its form, and how it works. The plate, when taken from the double back in the dark-room, is slipped into the lower part of the frame, which the operator holds by the horizontal cross-bar at the top. The plate thus placed cannot fall out, either during immersion in the developing solution, while being held up to the ruby light, or during washing in water. When fully developed and washed, the plate is lifted out of the frame by the operator and dropped into the fixing bath. The latter, which does not stain the fingers, would blacken the holding frame.

By this simple little device the operator need never stain the fingers by touching the developing solution.

Recent Patents.

THE following list of recent applications for patents relating to photographic and kindred subjects is compiled for us by Mr. Mellersh-Jackson, patent agent, 75, Chancery Lane, London, W.C., from whom further information may be obtained.

No. 22,607. "A simplified form and improved type of photographic lens" H. D. Taylor. November 25th, 1893.

No. 22,655. "Improvements in obtaining photographic images and in the manufacture of photographic plates, papers, and films." W. Friese-Greene. November 25th, 1893.

No. 22,733. "Improvements in the manufacture of positive printing papers, opals, and the like for photographic purposes." C. E. Pettitt. November 27th, 1893.

No. 22 757. "Optical demonstrator." A. H. Simpson. November 28th, 1893.

No. 22,942. "Improvements in application of photography to the production of printing surfaces." A. Hesekiel. November 29th, 1893.

No. 22,954. "Improvements in apparatus for exhibiting panoramic, dissolving, or changing views, and in the manufacture of slides for use therewith." W. Friese-Greene. November 29th, 1893.

No. 23,129. "Improvements in the construction of 'Pince Nez' and other eye glasses." A. W. Newbold. December 2nd, 1893.

No. 23,149. "An improvement in metal double dark slides for photographic cameras, to be opened bookwise, for exposure inside the camera." L. A. Zachariasen. December 2nd, 1893.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER IX.—*Continued.*

(III.) HOW SHOULD THE IODIDE SALT BE ADDED?

It is important how the iodide salt is added for the preparation of bromo-iodide emulsion. It is best to dissolve together bromide and iodide of potassium with gelatine, and then to mix with the silver solution. Abney mixed in earlier times gelatine, bromide of potassium, and silver nitrate so as to make an emulsion, then added the iodide of potassium. The latter converted the finely divided bromide of silver into iodide, without separating out in flocks. Such emulsion, however, must ripen much longer in heat than if the iodide salt (1-25th) was added to the gelatine at the beginning, and gives always thinner images than if one proceeds according to A or B. If one adds some iodide of potash to an ammonio-nitrate of silver emulsion (of pure bromide salts) after the emulsification is finished, digests, and then allows to set, the result is bad, since the images are without vigour. Experiments showed Dr. Eder[1] that iodide of potassium only slowly converted the already formed bromide of silver in the presence of excess of bromide of potassium into iodide of silver; that after half an hour's boiling considerable quantities of iodide of potassium were present, and these delayed the ripening process. That iodide of potassium in the emulsion, especially in faintly acid solution, actually lowered the sensitiveness, a second experiment proved: a highly sensitive bromo-iodide plate, with 1-50th iodide of silver bathed in a ½ per cent. solution of iodide of potassium, lost in sensitiveness. In every case the last traces of iodide of potassium had not entered into combination. The reverse way is better, namely, to add the iodide of potassium to the gelatino-nitrate of silver solution first and then the bromide salt. Abney himself proposed this method later, and dissolved nitrate of silver with gelatine in water, to which he added the mixture of iodide and bromide of potassium. A prepared, washed, strongly fogging working bromide emulsion was heated for a short time with iodide of potassium and again washed. The fog disappeared for the most part; but the emulsion was less sensitive.[2]

It was stated[3] that the best method of introducing iodide into an emulsion is to add the alkaline iodide to a strong silver solution in the presence of gelatine, and then to add this to the bromised gelatine. The highest sensitiveness is thus obtained. By the old method of adding the silver to the mixed bromides great sensitiveness is obtained, but too often accompanied by a granular precipitate. This will at once be seen is no more than is recommended above.

(IV.) EXPLANATION OF THE ACTION OF IODIDE OF SILVER IN GELATINO-BROMIDE OF SILVER.

Iodide of silver emulsion mixed with bromide of silver emulsion acts as a weak restrainer and keeps the plate clear during development.

Why is bromide of silver more slowly reduced by the developer if iodide is present? Why, also, is iodide of silver a restrainer in development for a bromide emulsion, and bromide and iodide of silver for a chloride of silver emulsion? In mixtures of prepared iodide and bromide emulsions no double compound is formed, and the cause of the prevention of fog and restraining action of the iodide of silver must be looked for in chemical statics. It is known, for instance, that silver is not extracted from gold or platinum alloys if the proportion of the latter exceeds a certain limit. Diluted hydrochloric or sulphuric acids, which are mixed with certain indifferent substances, such as glycerine, gum, pine soot, act much more slowly on iron, zinc, ultramarine, etc., and, therefore, this restraining action is, as Lunge showed, merely of a physical nature. Without doubt, many "restrainers" in photographic processes belong to the same class.

Iodide of silver, which is reduced with difficulty and almost photographically inert, deposited amongst the bromide of silver prevents the reduction of the latter in the developer; indeed, mere increase of the proportion of gelatine itself acts in the same way, but not so energetically. That the iodide of silver makes the image thinner is to be ascribed, indeed, to the non-actinic colour of the same, which hinders the penetration of the light. A yellow dye is able to replace the iodide of silver only in the last but not in the first action. Sugar, glycerine, or dextrine in the developer act equally as restrainers, but will replace the iodide of silver only in the first action and make the image vigorous. If this view is correct, any other silver salt difficult to reduce, added to the boiled bromide emulsion, must be also a preventive of fog; further, in suitable addition restrain the developing, without hurting the sensitiveness. In fact, very clean-working bromide emulsion acts similarly when added to more highly sensitive, faintly-fogged emulsion. (See Chapter XII.)

The varying behaviour, the greater colour sensitiveness, etc., of bromo-iodide emulsion digested together is explained most simply by the acceptance of a double combination of iodide and bromide of silver, since, in fact, the spectroscopic behaviour is completely altered.

(V.) CHLORO BROMIDE OF SILVER EMULSION.

The addition of small quantities of chloride of silver to the bromide of silver makes the same work through quicker; the shadows, which with pure bromide develop only faint and glassy, and only with continued development with printable details, gain by the addition of chloride of silver in detail. Large quantities of chloride of silver cause fogging with the ordinary developers for bromide of silver[5]. According to Elsden,[6] bromide emulsion mixed with chloride always gives more fog and thinner images, especially with pyro developers, than pure bromide emulsion. The above phenomenon ought not to be explained by a greater sensitiveness of chloro-bromide emulsion for dark shadows, but because a silver salt is present, which is more easily reduced by the developer than bromide of silver, also by a purely chemical and not a photographic action. If this assumption is correct, another easily reduced silver salt should have a similar action. In fact, a very favourable result is obtained if a gelatine plate be dipped *after exposure* in a very weak solution of silver, dried, and then developed; there appears an apparent increase of sensitiveness to about double, although the truth cannot be a real increase of photographic sensitiveness;[7] unfortunately, the negatives

[1] If one precipitates such emulsions with alcohol the iodide of potassium dissolves, and can, after the evaporation of the same, be easily qualitatively proved.

[2] Iodide of potassium acts on silver as easily as iodine, it even converts metallic silver into iodide of silver, whilst caustic potash is set free (Dike, "Comp. Rend.," vol. 93, p. 415). Evidently silver sub-bromide will also be converted by iodide of potassium.

[3] *Brit. Journ. Phot.*, 1890, p. 307.

[4] *Berichte der Deutsch.-chem. Gesellschaft*, 1876, vol. 9, p. 1,315.

[5] Abney found the mixture of equal parts of bromide and chloride of silver could be very well developed with his citro-oxalate developer.—*Photography with Emulsions*, 1882, p. 126.

[6] *Photo. News*, pp. 358, 534.

[7] By this experiment the idea ought to be exploded, that when bathing bromide plates in diluted silver nitrate (*Photo. Corresp.*, 1881, p. 117) the sensitiveness is to be exclusively attributed to the sensitising action of the silver nitrate.

may become stained. The chloride of silver or nitrate of silver, according to Dr. Eder's views, plays no other part than accelerating the reduction of the bromide of silver. A very small quantity of the chloride of silver ought, therefore, only to be used, so small that it is mixed with a sufficient quantity of gelatino-bromide, or the still more difficult to reduce iodide of silver so that it cannot suffer independent reduction.

In fact, in accordance with this view more chloride of silver can be mixed with gelatino-bromide of silver if the more difficult to reduce iodide salt be present. Further that infinitely less of the easily decomposable silver nitrate can be taken than of the chloride to attain the same effect. If this be accepted it may now be theoretically foretold that easily reducible silver salts must also play a similar role to the chloride, and as a matter of fact Dr. Eder has found that small quantities of an emulsion of silver arseniate increased the sensitiveness of a bromide emulsion in a similar manner to nitrate of silver.[1]

Bolton[2] stated in 1881 that a chloro-bromide emulsion faintly acidulated with hydrochloric acid was more sensitive than a pure bromide emulsion, heated equally as long, and that it was well adapted also for negative work, yet not so good as a chloro-bromo-iodide emulsion. Davis recommended chloro-bromide emulsions digested together, because of the delicacy of the images and the richness of half tone.[3] Chloro-bromide emulsions have, so far as is known to Dr. Eder, found no practical use for the preparation of negatives in the camera, if individual experiments are ignored. On the other hand, good results have been obtained with chloro-bromide in the positive printing processes on paper or for transparencies on glass. Chloro-bromide emulsion was first recommended by Dr. Eder in 1883[4] for this purpose, and later was found very suitable for this work by Wellington. For details of the same see Printing Processes with Gelatino-Chloride of Silver, further on.

VI.—Chloro-iodide Emulsions.

Chloro-iodide emulsions work with oxalate and other developers clearer than pure chloride emulsions. Schumann[5] found that a boiled chloro-iodide emulsion with sufficient proportion of iodide[6] was able to rank with pure bromide emulsion for camera work. It can be developed with pyro-potash as well as ferrous-oxalate developer.

VII.—Chloro-Iodide Emulsion with Cyanide and Chloride of Silver.

The mixing together of prepared bromide, iodide, or chloride emulsions gives the safest point for deduction of the role played by each individual silver salt. Iodide of silver causes always greater clearness, thinness, and slower development of a bromide emulsion. 1-50th of iodide of silver even shows this effect. The mixing of a prepared bromide or bromo-iodide emulsion with a prepared chloride emulsion leads less easily to fog than the incorporation of the chloride salt during the preparation. The soluble haloid must predominate, indeed, in a chloro-bromide emulsion. Soluble chlorides, however, act less as a preventive of fog in the boiling process than bromide. A chloro-bromide emulsion with 1-20th of chloride of silver boiled for half an hour works flat and foggy, whilst a bromide emulsion prepared in a similar way works clear. If, however, afterwards to the prepared pure bromide emulsion 1-10th to 1-24th of a prepared chloride emulsion which has been boiled for half an hour be added, the plates develop clear and denser than pure bromide plates. Therefore it appears in certain circumstances the bromide of silver of a chloro-bromide emulsion is more easily decomposed by boiling than that of a pure bromide emulsion. Thin-working bromo-iodide emulsions are corrected by 1-10th of chloride of silver and work denser. Emulsion which is inclined to fog is made worse by chloride of silver. According to Elsden[7] chloro-bromo-iodide emulsions, which have been mixed from the three separate emulsions, work clear and well if more iodide than chloride is present; but then the images are thinner than with bromide alone. But if more chloride of silver is present, so is the density the same as with bromide of silver. If too little iodide of silver is present, fog easily appears; in the presence of chloride of silver green fog is often formed with pyro and sulphite. Wilde[8] added some chloro-iodide of silver to bromide emulsion a long time ago, and obtained films on which the negatives had well covered and detailed shadows; also the rendering of the gradations of various colours is, according to Wilde, better in the negatives on such films. Bolton communicated in 1881,[9] that chloro-bromo-iodido emulsion boiled with a trace of hydrochloric acid at first was equally as sensitive, after standing, however, was more sensitive than pure bromide or chloro-bromide emulsion. Golding took for 4,800 parts of emulsion, 240 parts of silver nitrate, as much bromide of potassium as sufficed for the decomposition of the silver nitrate, *i.e.*, 168 parts, then 10 parts of chloride of ammonium, and 4 parts of iodide of ammonium; boiled emulsion prepared in this way contains no chloride of silver, since the chloride of ammonium is not used at all for the decomposition of the silver nitrate, but the emulsion should be very sensitive.[10] A cold chloro-bromo-iodide emulsion, prepared nearly according to Henderson's cold process (see Chapter XVII.), which was praised by "Ajax,"[11] gives, according to Scolik,[12] a clear soft emulsion with beautiful lights and a sensitiveness of 18° W., which offers no advantage over the original Henderson emulsion, that is bromide of silver with very little iodide. According to Barker, not only chloride and iodide of silver in the bromide emulsion, but an addition of cyanide and chloride of silver, acts well; the two latter give lightly sensitive, clear, and brilliant emulsions.[13]

Bell suggests the following formula for the preparation of a chloro-bromo-iodide emulsion, which is said to give very regular results:—

(A.)	
Ammonium iodide	·6 g.
Hot water	31 „
(B.)	
Ammonium chloride	1·30 g.
Water	15 „
Nitric acid	1 drop.

[1] That the mixing of a silver salt emulsion gives equivalent results to bathing in silver baths is evident.

[2] "Photo Almanac," 1882, p. 25.

[3] Davis digested 300 parts of gelatine, 10 parts of chloride of ammonia, 150 parts of bromide of potash, some hydrochloric acid, 200 parts of silver nitrate, and 4,800 parts of water (in the whole emulsion) for an hour at 70° C.; sensitiveness, 15-17° W. (*Brit. Jour. Phot.*, 1884, p. 147.)

[4] *Photo. News*, 1883, p. 98.

[5] *Photo. Wochenbl*, 1884, p. 357.

[6] For instance, 6·4 chloride of ammonia, 1·5 iodide of potash 16·5 silver nitrate, or 6·4 chloride of ammonium, 6·4 iodide of potash, and 21·4 silver nitrate, with the necessary quantity of gelatine and water.

[7] *Photo. News*, 1883, pp. 358, 534.

[8] *Photo. Corresp.*, 1884, p. 176.

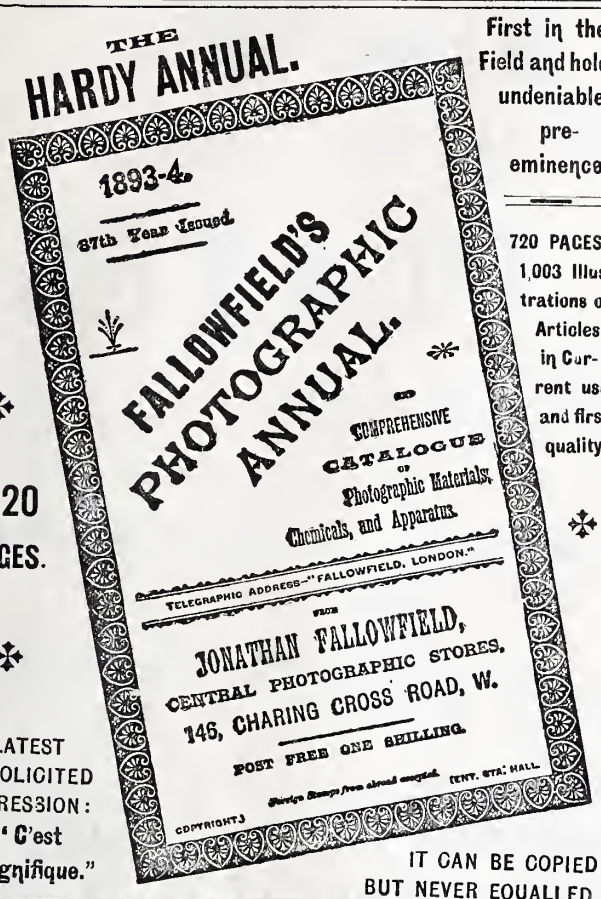
[9] "Brit. Journ. Almanac," 1882, p. 25. Bolton mixed 59½ parts of bromide of ammonium, 5 parts iodide of ammonium, 5 parts chloride of ammonium, 10 parts gelatine, and 120 parts silver nitrate, with the necessary quantity of water.

[10] *Photo. News*, 1882, p. 558.

[11] *Photo. Corresp.*, 1884, p. 252.

[12] Ditto.

[13] *Brit. Journ. of Photo.*



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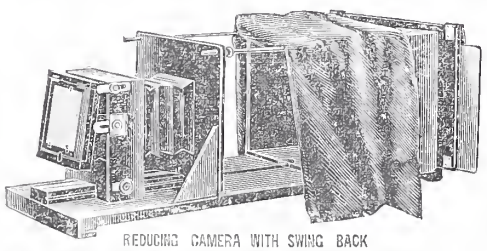
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(C.)

Silver nitrate	3·88 g.
Water	15 „

Add A drop by drop to C, then add B, wash the precipitate three times with water, and add to it 1·04 g. of Nielson's No. 2 gelatine, and some particles of glass, and heat moderately. Then add:

Potassium hromide	2·79 g.
Ammonia...	1·9 „
Water	15 „

Shake well and heat for fifteen or twenty minutes in a water bath to 90° F. When the colour of the emulsion appears blue by transmitted light, add 7·8 gr. of Heinrich's gelatine, which has been previously swollen and melted. The emulsion should be now allowed to set for six hours, again melted and again allowed to set, and then washed and used. Bell also mixed it with acid boiled emulsion with good results.

Wet Collodion for Beginners.

By Charles W. Gamble.

(*Continued from p.* 360.)

V.

It will he seen then that the strength of the developer may he varied to suit the subject. When we desire to ohtain strong contrast a proportionately weaker developer would he used than if we desired to suhdue or reduce the contrast.

In order to retard the reducing action of the ferrous-sulphate, acetic acid (as before mentioned) is added to the solution. Many acids also act in this way; they retard the reduction of nitrate of silver. For example, nitric and sulphuric acids, citric, and many other organic acids. These acids vary in their restraining effect and in the character of the deposit. It is desirahle that the deposit he as fine as possihle, and for this reason, and on account of its gentle restraining action, acetic acid is generally adopted. Gelatine, glycerine, and sugar retard the precipitation of metallic silver hy making the solution more viscous, and these hodies are often present in the developer. The reducing power of the developer also varies with its temperature; the higher the temperature the more quickly reduction takes place. For this reason more acetic acid - or other restrainer—is used in warm than in cold weather.

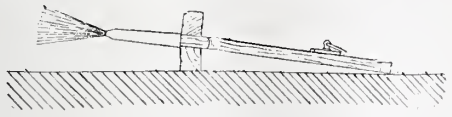


Fig. 6.

Alcohol is added to the developer to enahle the solution to flow readily over the film. With a new bath this is not required. When, however, the hath solution has heen used for sensitising a numher of plates, it hecomes charged with the solvents from the collodion, and when we come to develop, the film of solution upon the plate will repel a plain aqueous developer, and there will he a difficulty in flowing the solution, which may cause uneven development. The amount of alcohol, it will he seen, will vary with the state of the hath, and in most formulæ the amount is expressed as *quant. suff.* (as much as suffices). From 10-20 minims of alcohol per ounce (fl.) of developer will generally he sufficient. Methylated alcohol must not he used, as it is a frequent cause of stains and fog. The student will he asked to start practical work by copying a hlack and white drawing. A developer for the purpose will now he given, the formula for which is as follows:*—

No. 1.

Nelson's gelatine No. 1	15 gr.
Acetic acid, glacial, pure	120 min.
Water, distilled	1 oz. fl.

No. 2.

Iron proto-sulphate	120 gr.
Water, distilled	8¾ oz. fl.

No. 1.—The gelatine is soaked in the water for ten minutes, and the mixture warmed hy placing the vessel containing the same in hot water. When solution is complete, add the acetic acid and filter while hot.

No. 2.—*The iron salt must he freed from all reddish crystals.* Heat the water and dissolve the crystals. If the solution is not quite clear, filter. Then add together No. 1 and No. 2 and place in a clean stoppered bottle. This solution keeps well. If kept in a very cold place it may become too viscous for easy working. It should in this case be warmed to a temperature of hetween 55 and 60 deg. F., when it will become quite mobile. The writer has not found this developer to require the addition of alcohol. If, however, any one using it does find that the solution tends to flow unevenly, alcohol may be added *quant. suff.* The addition of the gelatine is found to give a more opaque deposit than would be ohtained in its absence. This is an advantage for the particular work we are about to engage in (copying black and white "line" subjects). The solution to be used should always be

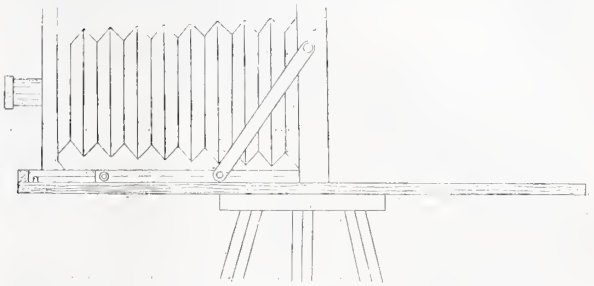


Fig. 7.

perfectly clear and free from insoluble suspended matter. If it is not so, it must be filtered before using it for development.

We will now give the formula for, and the method of preparation of, the other solutions required.

Intensifiers.—Intensification: This term is applied to any chemical process hy which we increase the opacity to actinic light of the deposit produced hy the first development. We may increase the amount of the deposit (density) by precipitating more silver on that already present (the term "re-development" is sometimes applied to this), and thus increase the opacity, or we may do so by other means, as hy treating the negative with a solution of mercuric chloride, followed by a solution of ammonia. The first-named agent causes the formation of a double compound of mercury and silver, which is changed hy the application of ammonia. This method increases the opacity also. A change in colour may also be hrought about—the deposit rendered more non-actinic—and this may he an advantage. Either of these methods or both may he adopted according to the requirements of the case. When the original deposit is very slight, and great opacity is required, the amount of silver is increased hy the precipitation method, silver intensification; and this is followed by another process, of which kind the mercuric chloride and ammonia is an example. If only a slight increase in opacity is required, the silver intensification alone may be used, or the mercuric chloride and ammonia alone. In all cases the particular purpose for which the negative is required has to be considered.

Silver Intensification.—In this method we apply to the film a solution of some reducing agent with free nitrate of silver. The silver salt is decomposed and the silver is precipitated in the metallic state, the metal being attracted to that already forming the image. The process is really a continuation of development, hence the term used, "redevelopment," and though the expression is used in another sense† in photo processes, it fairly accurately expresses what is meant.

The more silver we precipitate in the image the greater will he the density, and consequently the opacity to light.

The reducing agent most preferred is a solution of pyrogallol (pyrogallic acid), which is acidified with citric acid, the acid being for the purpose (as hefore mentioned) of restraining the action.

Two solutions are required, as follows:—

No. 1.

Pyrogallol	50 gr.
Citric acid	125 „
Water (distilled)	10 oz. fl.

The citric acid is dissolved in the water and the pyrogallol is then added. The solution is to he kept in a stoppered bottle preferahly.

* This formula is due to the late Jabez Hughes, *Photographic News*, Nov. 17th, 1865.

† As, for instance, when we convert the image in a positive on glass into chloride of silver, and reduce again by means of an alkaline developer.

The fungoid growth which forms in the solution, if kept for any time, should be filtered out.

No. 2.

Silver nitrate	100 gr.
Water (distilled)	10 oz. fl.

This solution should be kept in a stoppered bottle. Only a small quantity is required at a time, and it is most conveniently used from a dropping bottle.

With regard to other intensification methods, we have a number to choose from. The various mercury methods—Selle's uranium, Eder and Toth's lead, copper bromide—can be and are used according to circumstances. The writer prefers mercuric bromide and cyanide of silver, which is known as Monckhoven's intensifier.

The objection urged against methods of intensification in which mercury compounds are used is that the results are not permanent. This is perfectly true as regards the majority of the methods, and partially true of all of them; that is, in all cases the negatives are *liable* to change in time. The intensifier of Monckhoven is convenient to use, and the writer has found the results to be practically permanent.

For this intensifier we require a solution of mercuric bromide and silver cyanide, which are prepared as follows:—

No. 1.

a.—Mercuric chloride	240 gr.
Water	10 oz. fl.
b.—Potassium bromide	240 gr.
Water	10 oz. fl.

The solution *a* is added to *b*, and the combined solutions are filtered if necessary.

No. 2.

a'.—Silver nitrate	240 gr.
Water, distilled	10 oz fl.
b'.—Potassium cyanide (*recrystalised*)	240 gr.
Water	10 oz. fl.

The common lump or stick potassium cyanide must not be substituted, and the sample used should be fresh.

The solution *b'* is added slowly to *a'*, when a white, curdy precipitate of silver cyanide will be formed. Continue adding the *b'*, and it will be found that when about half of the amount has been added the white precipitate will commence to be dissolved, and if the whole of *b'* is added the silver cyanide will be quite dissolved. The addition of *b'* is stopped before this takes place, as a small quantity of silver cyanide must remain. It will be found that from 9 to 9½ oz. of *b'* are required. The last additions of *b'* must be made slowly, and the solution agitated well after each addition. If by accident too much of *b'* is added, a small quantity of a solution of nitrate of silver is poured into the bottle sufficient to cause a slight permanent precipitate. This precipitate is allowed to settle before the solution is used.

When great opacity is required Eder and Toth's lead intensifier may be used. There are, however, disadvantages in its use, and the writer prefers the following plan, which was given in the pages of *The Practical Photographer*, July 1893, p. 174. The image after silver intensification is treated with solution of bromide of copper afterwards followed by ammonium sulphide.*

No. 1.

Copper sulphate	500 gr.
Water	10 oz.

No. 2.

Potassium bromide	300 gr.
Water	10 oz.

No. 1 and 2 are mixed, filtered if not quite clear, and kept as a stock solution.

No. 3.

Ammonium sulphide	1 oz. fl.
Water	5 oz

The methods of using these intensifying solutions will be given in due course. One point of extreme importance may be here mentioned, and that is, that negatives which are to be intensified must be perfectly "fixed" and washed. Any failing in this direction will quickly show itself. Fixation should always be properly carried out, but it is particularly important when the negatives are to be intensified.

Fixing Solution.—For this purpose we may use a solution of potassium cyanide or sodium thiosulphate ("hypo"). Potassium cyanide acts as a solvent of metallic silver, and is therefore liable to cause a slight reduction in density, and the vapour given off from the solution is to some extremely hurtful. The writer prefers to use a solution of sodium thiosulphate, as given below:—

Sodium thiosulphate ("hypo")	4 oz.
Water	20 „

Varnish.—For preparing the varnish we require a *good* sample of orange shellac, methylated spirit (*best*), a small piece of pumice (say 1 oz.), and a clean dry pint bottle fitted with a sound cork. The pumice is to be broken up into small pieces the size of peas.

Shellac	350 gr.
Methylated spirit	10 oz.

Mix the shellac and the pumice well together, and place in the bottle, then add the spirit. Shake thoroughly until the shellac is dissolved, and allow to stand until the sediment settles. Then pour away the supernatant liquid through a funnel (in the neck of which is a pledget of cotton wool) into another clean dry bottle, and cork tightly.

(To be continued.)

* This method was suggested by some researches of Abney and of Warnerke made many years ago.

Bournemouth.—On 7th inst. a selection of prize slides were shown and much admired. At the close a number of slides by the Chairman, the Rev. H. Lee, were passed through and much admired.

Liverpool (A. P. A.).—Mr. W. Tomkinson presided at the meeting held on 30th ult. A lantern lecture was given by Mr. W. P. Christian on "Quiet Corners in France and Italy," in the course of which photographic views taken by the lecturer, of famous old towns and villages situated near the Italian Riviera, Venice, and the Italian lakes, were thrown on the screen with the most pleasing results. A sample Thornton-Pickard automatic camera stand was exhibited.

Rochester.—At a meeting Mr. J. H. Whitfield (Vice-President) gave an interesting and instructive lecture on "Lantern Illuminants," illustrating his lecture by the use of different lanterns and slides, Mr. E. Sidders Wilson having obtained the new patent oil lantern, from Mr. Stocks, of Rye. Mr. Whitfield thoroughly and clearly explained the various kinds of lanterns and the difference between them, and tested their difference by the slides he had prepared, some of which were extremely dense ones. Having dwelt at length on what were the requisites of a good lantern, he tested the powers of three lanterns, first a well-known oil lantern, which in 1892 was about the best on the market; secondly, Mr. Stock's lantern, fitted with the new patent lamp; and thirdly, a lantern kindly lent by Mr. C. Bird, with the limelight. He clearly showed that Mr. Stock's lantern was far superior to the first named, and that the light given compared favourably with the limelight, and it was admitted to be by far the best oil lantern that had been used in the district. A large quantity of slides by Messrs. Whitfield, Fry, and Dean were shown, and a very pleasant evening spent.

Edinburgh University.—A meeting was held on 28th ult., at which Dr. Drinkwater, the President, was in the chair. Mr. James Patrick, of Edinburgh, read a most interesting paper on the "Imitative and Imaginative Sides of Photographic Art," which he ably demonstrated by means of a number of slides passed through the lantern. A great feature of this meeting was the fact that the society's enlarging room was at last ready for use. The whole thing has been well done, the apparatus being highly approved of. A dark-room has also been specially got ready for the sole use of members who enlarge, and it contains all the larger-sized dishes, etc. Altogether the society has lately made very considerable progress in every way. The Secretary is engaged in making arrangements for another smoking concert to be held after Christmas, Professor C. Brown, the Hon. President, having kindly consented to preside.

The Photographers' Benevolent Association.—Meeting of the Committee, 30th ult., in the rooms of the Photographic Society of Great Britain, Mr. A. Mackie in the chair. First application was from an assistant out of employment who asked for £3 as a loan for temporary relief. Satisfactory testimonials had been received, but as he had been nine months out of employment, the committee thought there was little prospect of the grant asked for being a permanent relief. An immediate grant of 10s. was made, and the Secretary instructed to ask for further particulars. Second application was from a member of the association, an assistant, who asked for £30 to enable him to start in business for himself. The committee decided that this was not a form of loan they could grant. The Secretary reported that three of the applicants who had been helped during the summer had commenced to repay the loans by small instalments, and that another, to whom a camera was supplied a month ago, had reported that he was succeeding very well, and on receipt of payment for work which would be finished shortly, he hoped to repay the whole loan of between £4 and £5. Messrs. M. Howell, H. L. Morel, Geo. Carter, and Roland C. Whiting were accepted as subscribers. Donations were acknowledged from Messrs. Marion and Co., £3 3s.; Geo. Mansfield, £2 2s.; Capt. Abney, £1; Mawson and Swan, £1 1s.; Jonathan Fallowfield, £1 1s.; Watson and Sons, £1 1s.; Geo. Nelson, Dale, and Co., £1 1s.; F. W. Verel and Co., 10s. 6d.; Richard Keene, 10s.; H. G. Yatman, 10s.

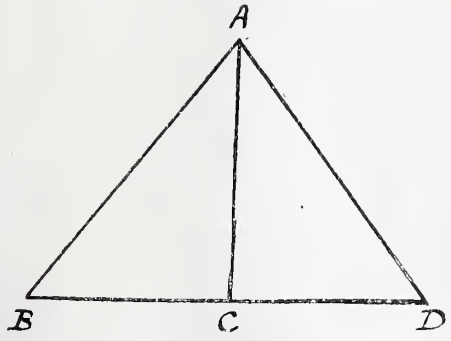
Angle of View, calculated to One-tenth of a Degree.

By Richard Farmer.

In your issue of March 17th, 1893, Mr. Rice gave rules for calculating the angle of view within one degree, and for practical purposes it would be difficult to get better. The following method of calculating any angle to an error not exceeding one-tenth of a degree might be useful to any readers interested in measurement of angles. It is very much Mr. Rice's rule over again, though arrived at on a different theory, and without anticipating or aiming at a rule similar to his.

In a triangle ABD, let A be the lens, and let AC perpendicular to BC be the length of focus. Let BD be *any line* of the plate, and C any point on the plate; that is, A, the lens, may be anywhere.

By adding BAC and CAD we get the angle of view, BAC. This paper shows how each may be calculated to one-twentieth of a degree, but for simplicity will give examples of cases only where BD is one side of the plate and C the middle of BD.



Every schoolboy knows that if BC is less than AC, the angle, BAC, is less than ABC, and *vice versa*; also that these two angles together make 90°, and if we can calculate the less, we know the greater; hence the problem is reduced to calculating an angle, BAC or ABC, taking whichever does not exceed 45°. For reasons to come, we will at present confine our calculations to angles of 22½ degrees and under.

$\frac{AC}{BC}$ is called the cotangent of BAC: $\frac{AC}{BC} = \frac{1}{\text{tangent}}$, and users of Dr. Woodman's tables will remember that the figures he gives are the tangents of half the angles of view, and that he ignores small fractions of an angle.

A small angle divided by its tangent or multiplied by its cotangent gives a product varying from 54·32 for 22½° to 57·33 for 1½°, etc.; hence 55 ÷ cotangent will give a small angle correctly to one-third of a degree, and an angle of view to two-thirds of a degree if not over 45° of view.

By making a small addition to each cotangent the products become more nearly equal, and for the purposes of this paper ·19 appears to be the addition producing least error. The error is *under* one-twentieth of a degree; we may use ·2 if satisfied with an error of about one-eighteenth, but ·19 is as easy to use. Thus:—

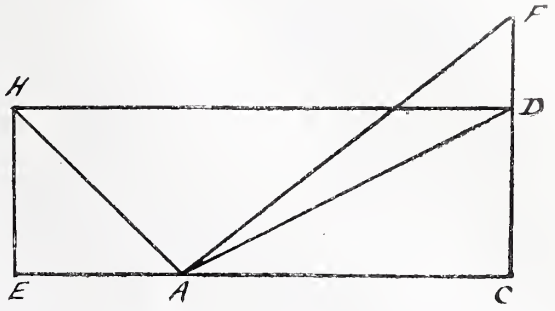
Angles in Decimals.		Cot.		Addition.		
1·43′	×	(40	+	·19)	=	57 606.
4·76′	×	(12	+	·19)	=	58·106.
9·4533′	×	(6	+	·19)	=	58·547.
14·0416′	×	(4	+	·19)	=	58·836.
18	×	(3·077	+	·19)	=	58·805.
20	×	(2·747	+	·19)	=	58·745.
22·5	×	(2·414	+	·19)	=	58·595.

It will be found from these that $\frac{58·7}{\text{cot.} + ·19}$ will give each angle, BAC, with an error under 3′ or one-twentieth of a degree, if the angle be 22½ or under.

If BAC range from 22½ to 45, it follows that 45 − BAC ranges from 22½ to nothing, and we can calculate 45 − BAC by preceding rule if we know its cotangent.

In passing I may note that if BAC range from 45 to 67½, BAC − 45 ranges from nothing to 22½ as in preceding case. Also that if BAC exceed 67½, ABC is under 22½, and so, by adapting our formula, we can get all angles.

By trigonometry we know that cot. (45° − BAC) $= \frac{\text{cot. BAC} + 1}{\text{cot. BAC} - 1}$; and if BAC be greater, then cot. (BAC − 45°) $= \frac{1 + \text{cot. BAC}}{1 - \text{cot. BAC}}$. As cot. BAC is $\frac{AC}{BC}$, these become $\frac{AC + BC}{AC - BC}$, which is the cot. of the difference. From this cot. we can by our rule calculate the difference, and add or subtract 45° to get BAC. *There is no confusion,*



for if AC exceed BC, BAC is over 45°, as shown in the schoolboy paragraph. Further, we know that if $\frac{AC}{BC}$ is 2·4142 or more, BAC is not over 22½, and that BAC is over 22½ if the cotangent $\frac{AC}{BC}$ be less than 2·414. BAC is over 67½ if ABC be under; that is, if $\frac{BC}{AC}$ be 2·414 or over. Finally, we know we are using the wrong formula if the cotangent we are adding to ·19 be under 2·414 (or $\sqrt{2} + 1$).

By Euclid, on lines CB make CF = CA; on line CA make AE = BC; draw EH = EA = BC at right angles to EA; join AB, AH, HF, HB. Then FBH is a right angle; and since by Euc. I. 5 EAH and CAF are each 45°, FAH is also a right angle. Therefore, by various propositions of Book III., FBAH are points on a circle, and FHA = ABC.

Also FAB, that is, 45 − BAC = FHB = FHA − BHA = ABC − 45. The cot. of FAB = cot. FHB $= \frac{BH}{BF} = \frac{AC + BC}{AC - BC}$, or just what we got by trigonometry.

Examples.—Taking BAD as twice BAC, find angles of view on a 10 × 8 plate with lenses of 16, 8, 4, and 2 inches focus.

$\frac{58·7}{\frac{16}{5} + ·19}$ × 2 gives 34° 38′; tables give 34° 43′

$\left(45° - \frac{58·7}{\frac{8+5}{8-5} + ·19}\right)$ × 2 „ 64° 3′ „ „ 64° 0′

$\left(45° + \frac{58·7}{\frac{5+4}{5-4} + ·19}\right)$ × 2 „ 102° 46′ „ „ 102° 41′

$\left(90° - \frac{58·7}{\frac{5}{2} + ·19}\right)$ × 2 „ 136° 22′ „ „ 136° 23′

The errors are 5′, 3′, 5′, 1′; each less than one-tenth of a degree. These illustrate the four cases under which all angles fall.

The angle on a plate 6½ × 4¾ with 6½ inch lens works out to 53° 12′ instead of 53° 7′.

If 58·67 be used instead of 58·7, the result is a little closer.

In the report of the Croydon Micro. Phot. Soc. on Dec. 1st, Messrs. Hannam and Co., of Soho Square, showed mounts, not Adams and Co., as stated.

Messrs. Burroughs and Wellcome have won the highest award granted by the judges at the recent exhibition at Chicago for their photographic "tabloids." We have before now spoken highly of these, and continued experience proves them to be a great boon to the busy man whether on tour or at home.

Mr. Horatio Nelson King had the honour of submitting to H.R.H. the Duke of Saxe-Coburg and Gotha at Clarence House his series of photographs of the private and State apartments of Clarence House. H.R.H. highly congratulated him on the excellent results of the very charming series he has produced, and has since by Royal warrant appointed Mr. King landscape and architectural photographer to H.R.H.

The Recent Solar Eclipse.

BY CAPTAIN E. H. HILLS, R.E.

PHOTOGRAPHIC methods play such an important in modern eclipse observations that no excuse is needed for bringing the subject before this Society.

The more general question of astronomical photography has been ably dealt with by many writers, and I shall not encroach upon it here. There are many points that mark off eclipse work as quite distinct from any other branch.

There is first the necessary shortness of exposure, an eclipse never lasting much more than seven minutes, and generally under three. The maximum duration of the one of April last was nearly five minutes, and the eclipse of the shortest duration that has been successfully observed in recent times was the one of 1882, of which the totality was only seventy seconds. But so great is the gain of replacing eye by photographic observations, that I think it may be fairly said that if there were to occur an eclipse with a duration of totality of only ten seconds, it would be amply worth while sending an expedition many thousand miles to observe it.

There is one reason, indeed, why an eclipse with a very short totality would be most interesting to observe, and that is for the purpose of gaining information about those regions which lie close to the body of the sun, and which are completely covered up during an ordinary totality, except during the first and last second or two. In a very short eclipse these regions would be much more exposed, and we might gain valuable information as to the so-called "reversing layer," about which eye observations are in total conflict, and which wait now the decision of the photographic plate.

The next point about eclipse observations is the absence of choice of locality, the average breadth of the shadow being about seventy miles, and being generally for the greater part of its length over the open sea, in addition to which, when we consider the fact that the observing station ought to be as near as possible to the central line—certainly not more than ten miles from it—we see that the choice of situation is not large. Where there is any choice, we should try for a high altitude, it being there where a clear atmosphere with absence of moisture is found. It by no means follows that in a place where we are certain of fine weather we are also certain of getting good observations. What I mean to say is, that in those places where the weather is continuously fine, there is also a large amount of dust and haze continuously present, which greatly interferes with the more delicate observations.

I believe that Dr. Common has found in his photography of nebulæ that intervals between clouds give the best chance of obtaining good results, and this same thing was exemplified in the eclipse of April last.

Of the two British expeditions the one which went to Africa was practically certain of fine weather, while that which went to Brazil was almost equally certain of wet weather, so much so that the expediency of sending it at all was very much doubted. As the event turned out, both stations had good views of the phenomenon; but in Africa there was a considerable amount of haze present; whereas in Brazil, where the sun was seen between two clouds, the air is described as having been remarkably clear. Absence of moisture is, however, of great importance, as, if there is any considerable amount present, there is great chance that the actual drop of temperature during the eclipse may cause a precipitation—as happened at Granada in 1886.

We therefore come back to the fact that a high altitude is the ideal situation for an eclipse observatory, such as was occupied by the American observers in April last, on the high grounds of Chili.

We now come to the question of instruments, which theoretically ought to exhibit in a high degree the qualities of portability and simplicity. As regards portability we must place rather a liberal interpretation on this word. Anyone who has done any instrumental work of any kind knows how hopeless it is to try and work with light instruments on insecure foundations; more especially is this the case when they have to be hastily adjusted and time is of great importance.

We took with us to Africa bags of Portland cement with which to make concrete bases, and this is certainly well worth doing in similar cases. The French observers in Africa, I may mention, placed their instruments upon brick pillars, which is in some ways an advantage, as it enables one to leave the heaviest part of the mounting behind; but of course they require time to build, whereas a concrete base can be put in one day and will be hard enough to work upon the next.

In considering the question of instruments we are at once confronted with the question of refraction versus reflection—that is to say, whether we shall mount our instrument, be it spectroscope, camera, or telescope, upon an equatorial mounting, or whether we shall fix it in a horizontal position and reflect the light into it by means of a siderostat.

There are advantages claimed for both systems; on the one hand we have in favour of the equatorial: first, that the maximum amount of light gets into the instrument, and secondly, the driving motion is simpler and therefore less liable to go wrong—being a rotation round an axis instead of a combined rotation and sliding motion. On the other hand, we have in favour of reflection the smaller bulk and consequently the increased portability of the instrument, and the fact that as the telescopes, etc., are mounted horizontally and have not to move, they can be very firmly fixed in position and require little head-room, so that if necessary they could be placed in a building. This might be of importance in a very cold climate; as, for instance, in the case of the next eclipse of August, 1896, which will be observable in Lapland and Nova Zembla.

There is a modification of the siderostat which seems to be, on the whole, best for eclipse work, and that is what is known as the polar siderostat. This instrument throws its beam of light towards the pole; for a low latitude therefore, where the elevation of the pole is small, it is particularly convenient.

The latitude of Fundium was 14° 30′, and the French observers there had a good example of this class of instrument—(slide).

In high latitudes it would, of course, be impossible to arrange the instruments in this way, and it becomes necessary to have a second mirror to throw the beam in a horizontal direction. This involves some loss of light, but not an important quantity. This loss can be compensated for by an increase in size of the telescope or camera lens, which, as a mere question of money (to which after all everything reduces itself), would be amply paid for by the saving in other ways—the polar siderostat being a comparatively cheap instrument to construct.

When we have many instruments to supply with light we can either have one large siderostat or several small ones—in the latter case they need not all have separate clocks; but the adjustments would certainly take longer and it would probably be better to have as few instruments to adjust as possible and have therefore our siderostat mirrors as large as possible.

You will all readily appreciate what an immense advantage it is on this system to have all the photographic cameras mounted separately on fixed mountings, whereas on the equatorial system they have to be carried round with the motion of the instrument.

We are always confronted by the dilemma as to how many instruments it is advisable to have on one mounting, and as an example of the different conclusions to which astronomers have come on this subject I may mention that our expedition to Africa had four equatorial mountings—two of which had two instruments and two only one—whereas the party of American astronomers which went to Africa in 1886 were provided with an instrument which had no less than twenty-seven cameras on one mounting, operated by playing on a sort of key-board which controlled the electric shutters. Clouds unfortunately prevented this ingenious instrument being used, and I have not heard that it took part in the operations of this year.

(*To be continued.*)

Woolwich Polytechnic.—A meeting was held on 20th ult., Mr. H. Kemp in the chair. A demonstration of the carbon process was given by the Autotype Co.

Woolwich.—On 23rd ult., Major Charles D. Davies in the chair, some prints were handed up for inspection by Messrs. Dawson and Panting. During question time the old difficulty cropped up, *i.e.*, how to mount prints on gelatino-chloride papers. It would seem as though the Kent water is the cause of some of the trouble, leaving chalk deposits wherever the print is wetted. Further discussion, however, had to be deferred. The chairman introduced Mr. Albert Hill to the meeting, who then proceeded to give a practical demonstration on enlarging by Cresco-Fylma, in course of which Mr. Hill said that the best results were obtained on films developed with hydrokinone or rodinal. Several films both negative and positive, were removed from their original glass support, and steadily enlarged to about double the size, and then placed on their new support. The whole operation is remarkable for its simplicity.

South London.—Ordinary meeting on 20th ult., the President (Mr. F. W. Edwards) in the chair. Mr. A. LeBlanc gave a demonstration of developing, toning, and fixing with Dr. M. Andresen's cartridges. He first used a metol cartridge, dissolving it in about 7 oz. water. With this he developed an isochromatic plate which had been previously exposed on a group of chrysanthemums. The gradation of the whites was perfectly rendered. For fixing, the demonstrator dissolved a bar of fixing salts in about 40 oz. of water, which gave an acid fixing bath. The portability of the fixing salts was much admired. Lantern slides developed with cartridges were also shown. Development of paper prints with metol and amidol cartridges followed. The Hon. Sec. showed the Thornton-Pickard improved tripod. Samples of Barnet plates were distributed among the members for trial.

CHADWICK

DEAR READER,

It would be impossible to illustrate or even to enumerate the whole of my Specialities in a single advertisement. The more space I occupy in these pages the more I have to pay, and the cost of advertising must come out of profit somehow. If I did not advertise at all, I should have fewer customers, and by the same argument, to advertise more I ought to do a bigger trade, and consequently be able to exist on less profit. Yes, but my Specialities are neither Soap nor Dry Plates; everybody uses soap, and nearly every reader of this Journal uses Dry Plates, but they are not always wanting Cameras or Lanterns, etc., and as my Photographic and Lantern Apparatus are Special Lines, which the public is not yet educated up to, there is a limit to the extent to which advertising may be successful. My ambition has not been to run the biggest trade, but to hold the highest reputation for the goods I supply. In Stereoscopic Apparatus I have succeeded in both, gaining the highest reputation, and doing the largest trade—one brought the other.

It is quite true that I have many imitators, both in Photographic and Lantern Apparatus, but as a rule these pirates are more commercial than practical, and it is not difficult for me to keep ahead of them.

I offer for sale nothing that I have not personally tested or used in my own practice. I claim to have as much enthusiasm in Photographic, Lantern, and Microscopic matters as any reader of these pages, amateur or professional, and the best of everything is not too good for me; anything not the best is practically useless to me, especially since I discovered (a long time ago) that the best is not necessarily the most expensive.

And now, having arrived at nearly the end of my advertising space, I conclude by inviting you to send for my pamphlets and price lists. You will find they differ from ordinary trade catalogues.

We have two Series, one on Photographic, the other on Lantern and Optical Projection matters, so please say which you require. Of course, we shall be glad to send both sets if you promise to read them, notwithstanding that they cost, out of pocket, about 6d. printing, and 3d. postage.

W. I. CHADWICK,

2, St. Mary's Street, MANCHESTER.

Several Second-hand Hand Cameras and Biunial Lanterns to be sold by the piece or by weight.

MEZZOTYPE.

The only really Artistic Print-out Paper in the Market.

Made in Two Surfaces, No. 1, Very Rough, No. 2, Medium Rough.

PREPARED ONLY BY

THE CARLOTYPE CO., RAINHAM, ESSEX.

BREAKFAST—SUPPER.

EPPS'S

GRATEFUL—COMFORTING.

COCOA

BOILING WATER OR MILK.



Cheapest House in the Trade for

OAK FRAMES

Suitable for Framing Photographs,

Made of Best Solid Oak with Oak Veneered Mounts.

Rebate size.	Opening of Mount.	
10 by 8 ...	... 5½ by 4 ...	... **9d.** each.
12 „ 10 ...	... 8 „ 6 ...	... **1/3** „
14 „ 12 ...	... 9 „ 7 ...	... **1/9** „
16 „ 14 ...	... 10 „ 8 ...	... **2/6** „

Price List for Other Sizes on Application.

M. SELLO, 73, Finsbury Pavement

(Close to Moorgate Street Station, London).

The Optics of Photography, and Photographic Lenses.

By J. TRAILL TAYLOR, Editor of "The British Journal of Photography." 3s. 6d.

"Personally we look upon this book as a most valuable labour-saving invention, for no questions are so frequent, or take so long to answer as those about lensee."—*Practical Photographer.*

"Written so plainly and clearly that we do not think the merest tyro will have any difficulty in mastering its contents."—*Amateur Photographer.*

London: WHITTAKER & CO., Paternoster Square.

TO Amateurs desirous of commencing business, an unusual opportunity presents itself in London suburb. Capital required about £150.—No. 454, c/o Advertisement Department, 1, Creed Lane, Ludgate Hill, E.C.

FIRST-CLASS opening for smart amateur who is well up in all branches, as SALESMAN in photographic apparatus department. Apply by letter to—Assistant, c/o Advt. Dept., 1, Creed Lane, Ludgate Hill, E.C.

COMPLETE TUITION in CRYSTOLEUM PAINTING for 10s. 6d. Personally or by correspondence.—Kyte, 92, Aubin Street, Waterloo Road, London.

When giving a 'Lantern Show,' if you wish to bring down the house, exhibit some of the

"Cloud & Water Effects,"

or the

"Animal Studies,"

MADE BY

G. W. WILSON & CO., Ltd.,

2, ST. SWITHIN'S STREET, ABERDEEN.

Lists Post Free.

Christmas Lantern Slides.

"Grand Transformation Scene," Also "Fairy Glen," with Dancers.

From Negatives Taken Direct.

Price 1/3 each. Postage 2d.

Lists Free. Trade Supplied.

GRAYSTONE BIRD, Photographer, BATH.

Caution!

In the construction of

EXPOSURE METERS

the use of Circular Slide Rules, combined in one instrument with an Actinometer, is secured to the Invention of the

Watkins Exposure Meter,

by Patents 1,388, 1890; 14,364, 1893; and patent application 19,282, 1893.

Proceedings will be taken against any person making or selling instruments in infringement of the said patents.

ALFRED WATKINS, HEREFORD, Patentee.

R. FIELD & CO., BIRMINGHAM, Licensees.

SLIDES GRATIS.

TO Lanternists willing to exhibit them, PEEK, FREAN & Co., the Biscuit Manufacturers, Drummond Road, S.E., are prepared to lend, without charge, and to send post free, a pair of Coloured Magic Lantern Slides, representing two of their advertisement pictures.

TO LANTERNISTS.—NEW LIMES for the LANTERN. One lime lasts several lectures. Requires turning only once per hour. Will keep exposed to the air any length of time. Price **1s. 4d.** dozen, free.—DAVIS, ENDOBY, GUERNSEY.

Sale and Exchange.

RULES.

CHARGE.—*Twelve words or less for Fourpence. Every additional three words, one penny. The name and address of the sender must be paid for. (A single figure, or group of figures undivided by letter, space, stop, or words, counts as one word: compound words count as two words.)*

DEPOSITS.—*Money for goods forwarded on approval may be deposited with the Publishers of the* AMATEUR PHOTOGRAPHER, *who will hold the amounts deposited until they are satisfied that the transaction has been completed to the satisfaction of buyer and seller.*

ADDRESS.—*All advertisements (which can be received up to Tuesday mid-day) and other communications having reference to the Sale and Exchange column, must be addressed "Sale and Exchange,* AMATEUR PHOTOGRAPHER, *1, Creed Lane, London, E.C."*

REPORTING.—*Apparatus may be sent to the* EDITOR, AMATEUR PHOTOGRAPHER, *1, Creed Lane, London, E.C., who will report upon the apparatus to the buyer for a minimum fee of 2s. 6d., or a commission of 2½ per cent., upon the sale price of the apparatus.*

COMMISSION.—*A charge of 2½ per cent. will be deducted from all deposits whether a sale is effected or not. Minimum charge 1s.*

PAYMENT.—*All payments are to be by cheques or Postal Orders, made payable to Hazell, Watson, and Viney, Ld., 1, Creed Lane, London, E.C.*

PAYMENTS *should be made in Postal Orders or Postage Stamps.*

Backgrounds.—Ship's deck, garden scene, village lane, cottage window, interiors, etc., canvas, 8 by 6, flatted oils, 12s. 6d. Satisfaction guaranteed. Photographs two stamps.—Hare, Sutton, Surrey.

Case.—Camera case, solid leather, carry half-set, handle straps, lock, approval, 14s.—Adams, 237, St. Ann's Road, Tottenham

Dark Slides. — Dark slides, three Instantograph, fitting half-plates, perfect, 6s. 9d. each; approval.—Adams, St. Ann's Road, South Tottenham.

Dark Tent.—For indoors, 6 ft. by 4 by 3, cost 42s., will sell for 15s., or exchange anything photographic; nearly new.—W. H. T., 134, Munton Road, New Kent Road, S.E.

Frames.—Exhibition oak frames. Send photographic print, and receive back same beautifully mounted, and framed in solid oak, as sample, carriage paid, quarter-plate, 1s. 6d.; half-plate, 2s.; whole-plate, 2s. 6d. Price list free, estimates free for any style of framing.—T. R. Curran, picture-frame Manufacturer, Ashton-under-Lyne.

Hand-cameras, etc.—Eamar quarter-plate hand-camera working at *f*/6, all improvements, perfect condition, plates, lamp, etc., £5; half-plate camera case, small collection of foreign and English shells, half-plate sliding stand, quarter-plate changing bag, sell or exchange stamps and curios.—Waters, 21, Westbourne Park Road, London.

For sale, Kodak No. 2 in perfect order, very little used, price £3 10s.—Address, Mrs. Thornely, Belvedere House, Esher.

Robinson's secret camera, worn under the vest, cost 35s., will sell for 12s. 6d., or exchange anything photographic.—W.H.T., 134, Munton Road, New Kent Road, S.E.

Polished rectilinear Talmer, just new, unscratched, cost £6 10s., sell £4 10s. lowest.—Clarence Jones, 43, Alexandra Road, Blackburn.

Lantern, etc.—Lantern, Russian iron body, three-wick lamp 4 in. condenser, approval, deposit, price 35s. —Cave, Chemist, Southport.

Lantern Slides.—Royal Wedding Procession and Street Decorations, set of twelve lantern slides, 10s. free.—John Stabb, 154, Queen's Road, Bayswater.

Lenses, etc.—7 by 5 rapid rectilinear lens, maker, Banz, very fine definition, covers well to edges, fitted Waterhouse stops, focal length 8½ in., movable hood, finest condition, approval, 25s.—Mrs. Webb, 7, Silver Street, Edmonton.

Splendid whole-plate R.R. lens by Watson, Holborn, with iris diaphragm, 11 in. focus, cost £5, for £3 — Mrs. Fawssett, Louth, Lincolnshire.

Wray hand-camera lens, iris diaphragm, as new, 40s. —Ware, Upper Edmonton.

Half-plate rapid rectilinear, splendid definition, Waterhouse stops, 17s. 6d.—Durn, Wotton-under-Edge, Glo.

Lancaster's half-plate patent portrait lens with iris diaphragms, cost 60s., sell for 32s. cash.—J. Mills, York Street, Todmorden, Yorkshire.

Plates.—Through death of owner a quantity of photographic plates (Wratten and Wainwright) to be sold at a great reduction; ten dozen 4½ by 3½; six dozen 5 by 4; three dozen 6½ by 4¼; seven dozen 7½ by 5; two dozen, 8 by 7; four dozen 10 by 8; two dozen 12 by 10; two dozen 14 by 12.—At Eastman Brothers, second floor; L. M. S., 3, Devonshire Road, Forest Hill.

Sets. — Underwood's half-plate Exhibition set, brass-bound, £4 4s., as new.—Apply, 66, Middle Street, Yeovil.

Whole-plate Instantograph set, three double backs, lens, shutter, three dishes, two printing-frames, masks and vignette glass, one dozen plates and sundries, water-proof cases for stand and camera, all in first-class order. £7 10s., or offer.—Letters, G. L., 5, Kelso Kensington.

Lancaster's Instantograph, half-plate, complete with three slides, lens, shutter, stand, and case, £2.—Wills, 48, Northumberland Place, Teignmouth, Devon.

Lancaster's 1893 half-plate Instantograph camera, dark slide, tripod, and R.R. lens, 63s.; three dark slides to fit, 6s. 3d. each; case, 4s. 6d.; all good as new.—Cheltenham House, Stroud, Glos.

Half-plate camera, double extension, latest improvements, three slides, very fine rectilinear lens, bayonet tripod, £4 4s.—29, Mayes Road, Wood Green, N.

Sundries.—Twelve wood boxes for storing negatives, each holding sixty quarter-plates, 12s.; twelve ditto, holding sixty half-plates, 16s.; twelve ditto, holding fifty lantern slides, 10s.; all bargains, cash only.—Thompson, Photographer, 72, Market Street, Bradford.

12 by 10 Multum in Parvo enlarging camera, carriers down to lantern plate, one deep porcelain dish, 13 by 11, two shallow ditto, all unused, take 32s; quarter Instantograph lens, and pneumatic see-saw shutter, 15s.; four quarter-plate slides, Tylar's, 5s. 6d.; quarter Instantograph tripod, perfect condition, 4s. 6d. Wanted, first-class hand-camera.—Glover, Percy Villa, Warwick.

Valuable bargains. For sale, a splendid mellow-toned violin in perfect preservation, very handsome model suitable for professional or any violinist, for solos or concerts; complete with high-class baize-lined case and silver-mounted bow, also Wolff's 5s. instruction book, resin, mute, tuning fork, etc. If sold at once will accept 21s. for the whole lot. Cannot fail to give highest satisfaction; approval with pleasure, worth.—Miss Garland, 84, High Street, Maldon, Essex.

WANTED.

Camera, Lenses, etc —Wanted, 10 by 8 camera, tripod, lenses, also wide angle by good maker.—Address, R. Robinson, 11, Hope Terrace, Nelson, Lancashire.

Enlarging Apparatus, etc.—Wanted, enlarging lantern for half-plate negatives in good order, without lens preferred. — Colonel Hooper, Hatchlands, Beaminster, Dorset.

Lenses — Wanted, pair stereoscopic wide-angle rectangular, cash; letters answered by—Mr. White, Blackpool.

Set.—Wanted, quarter-plate set, Optimus or special Lancaster lens preferred. — Huommel, 5, Lovaine Row, Newcastle.

It is unnecessary to send an advertisement for the "Sale and Exchange" column for more than one insertion, as the goods are usually disposed of when the first advertisement has appeared.

Bijou Enlarging Lanterns.—Finest results with Hughes's patent rectangular condensers, half the size of ordinary make, superior definition, proper diffusion of light, scientifically constructed, not commercial; several whole and half plate for sale, cheap.

The Marvellous Pamphengos. — Finest oil-lighted lantern, equals limelight, stood the test against all imitations. Over 3,000 sold; supplied to the Government, School Boards, etc., etc., high-class lenses, unequalled, £2 10s. each.

Magic Lanterns.—Largest assortment in the world, cheapest and best. The Universal lantern, 4 in. double condensers, portrait lenses, rack and pinion, four-wick lamp, £1 5s. 6d.

The Docwra Triple Prize Medal, highest award, supplied to Dr. H. Grattan Guinness, Capt. C. Selwyn, Madame Adelina Patti, and the Royal Polytechnic, etc.

Miniature Malden Triple; supplied to B. J. Malden Esq.; unparallelled results; Capt. Chas. Reade, R.N., and known exhibitors.

Fine Triple Lantern; nearly new; telescopic draw tubes, four sets of high-class lenses, £32 10s., worth double. Given away. A splendid instrument.

Special Triple, mahogany, entire solid brass fronts, £12 12s; a really good lantern, unequalled.

"The Art of Projection," by an Expert. Over 100 choice illustrations priceless wrinkles in all departments, from oil, limelight, enlarging to electric Polariscope lanterns, a really practical work. B. J. Malden says it should be studied by the experienced operator and amateur alike. Price, bound in cloth, 3s. 6d., postage 5d. See opinions of the press.

Elegant Mahogany Biunial; brass fronts, £6 10s.; blow-through safety jets, 6s. 6d. and 8s. 6d.; mixed gas jet, 12s. 6d.; Malden double dissolving tap, 12s. 6d.; regulators and gauges, 12s. 6d.; grand effects. Send for Mr. Hughes's grand catalogue, over 180 original wood engravings, price 6d., postage 3d.; separate list of 60,000 slides, price 6d., pamphlets and second-hand lists of bargains free.—W. C. HUGHES, Brewster House, Mortimer Road, Kingsland, London, N. Fifty slides, all nicely coloured, not inferior, on loan for 3s., in special despatch boxes.

Cameras, Cameras, Cameras, and Photographic Apparatus of every description, both new and second-hand, always in stock. Immense variety by all well-known makers, including Ross, Dallmeyer, Shew, Watson, Optimus, Adams, Lancaster, Underwood, Talbot and Eamer, Fallowfield, Beck, Wray, Crouch, etc., etc. Before selecting elsewhere call and inspect the various Apparatus by all makers, including 500 Field Cameras, 450 Hand Cameras, 700 Lenses, various sizes and by different makers, 250 Magic Lanterns, thousands of Slides, Field Glasses, Marine Glasses, Microscopes, Plates, Chemicals, etc Apparatus supplied upon easy terms; lent on hire by day, week, or month; taken in exchange for other goods; sold on commission at small percentage; or bought for prompt cash. All goods guaranteed, and exchanged if not approved of. Write for special lists and all information to Manager, City Sale and Exchange, 54, Lime Street, corner of Leadenhall Street, London, E.C. (Inspection invited)

SECOND-HAND CAMERAS AND LENSES, etc. The best place to buy Second-hand Photographic Apparatus is SANDS, HUNTER, & CO., 26, Cranbourn Street, Leicester Square, London, W.C.; who only deal in reliable and best quality apparatus. Approval allowed on all goods, with deposit. Cameras and Lenses, by good makers, bought for cash or exchanged, also let out on hire. Send for Catalogue, gratis and post-free. *Please quote this Advertisement*

WILFRED EMERY, 24, South St., Baker St., LONDON, W.

AMATEURS' NEGATIVES *developed, retouched printed* in Solio, platinotype, bromide, etc., and *finished* in any style. Also *Enlarged* in Bromide, etc., and finished in Black and White or Colours.

Full price list on application. Lessons given in all branches.

EMERY'S "PREMIER" NEGATIVE VARNISH effectually protects negatives from silver stains, damp, scratches, etc. Sample bottle to be obtained from all dealers, or from W. EMERY, for 1s. 2d. post free.

PHOTOGRAPHIC, SCIENTIFIC, AND MISCELLANEOUS PROPERTY.—Mr. J. C. STEVENS' SALES BY AUCTION of Miscellaneous Property of every description take place nearly every FRIDAY. Lists for Catalogues should be sent at least a week before the sale.—38, King Street, Covent Garden, London, W.C.

FIRST-CLASS PRINTING IN SILVER, PLATINOTYPE, AND BROMIDE, AT LOW CHARGES.

Amateur Photographers desirous of obtaining the best results from their negatives should send for our price list (sent post free) and specimen print.

Best work only, and moderate charges.

Retouching, Copying, and Developing, at Trade Prices. Photographic Lantern Slides prepared. *Send for Price List.*

Address: Photographic Studio, Swanley, Kent

HIGH-CLASS CAMERAS, unsurpassed workmanship, all movements, from Quarter at £1, up to 12 by 10 at £6 10s., on approval. See these Cameras before you buy one elsewhere; it will pay you. All Photographic Apparatus, Stands, Enlarging Cameras, and Glass-Bottom Dishes for developing, toning, fixing, etc. Send for List.—HAVERSTOCK MANFG. CO., 70, Chalk Farm Road, London.

OPTICAL LANTERN MANUFACTURERS — AND — **PHOTO BRASS FINISHERS.** *All Accessories Supplied.* **PLATT & WITTE,** Birkbeck Rd., Dalston, London, N.E. LIST FREE.

SLIDE MAKING AND COLOURING.

SLIDES MADE from Customers' Own Negatives, 6/- doz. Customers' Own SLIDES COLOURED in an Artistic and Effective Manner, 4/6 doz.

FULL PRICE LIST FREE.

T. T. WING, **Chatteris, Cambridge.**

A B C of the Lantern.

Curtain.—Instead of the flap-shaped metal or wooden door with which it has hitherto been the custom to fit lanterns, a curtain of velvet or cloth running on rings attached to a removable brass rod is very often substituted in the best class of new instruments. The latter plan has several advantages; it affords the operator more convenient access to the jet, the curtain being entirely removable at pleasure; and it also more effectually prevents stray light escaping from the lantern, which causes discomfort to the audience sitting behind, and detracts greatly from the brilliance of the image upon the screen.

Curtain Slide. (See also SLIDES.)—The brass or metal diaphragm or shutter which slides up and down in front of the condensers of a biunial or triple lantern, by means of which the effect of a curtain being raised or lowered is produced. The shutter is sufficiently long to reach to the stage of the lower lantern, and has a square opening cut in it, so arranged that (a slide representing a curtain being in one lantern and a landscape in the other) when the shutter is lifted a portion of one disc is observed and a corresponding portion of the other uncovered, the effect obtained representing very faithfully the raising of a curtain and the disclosure of a landscape or other view behind. The term "curtain slide" is also applied to the painted transparency used to produce the illusion—for which, see "Slides."

Cut-off Jets.—A very ingenious device, the invention of Mr. Andrew Pringle, which enables a lanternist to turn down the light of the lantern, whether single, biunial, or triple, during an interval, or at any stage of an exhibition, without disturbing in any-way the adjustment of the jet or jets. It will be seen that an intermediate or additional tap is provided between the ordinary jet taps and the mixing chamber. These taps are geared together with cog-wheels in such a way that they are actuated simultaneously by rotating a spindle at the rear of the jet, which turns a cog-wheel engaging in them. The utility of the arrangement will now be obvious. The light having been adjusted, it becomes necessary in the ordinary way of working to lower the gas at the jet taps and, consequently, to readjust the light before making a fresh start. With the cut off arrangement all that has to be done is to rotate the milled head until the whole of the oxygen is cut off, a bye-pass allowing just sufficient hydrogen to keep the jet alight. At the conclusion of the interval, by again rotating the spindle, the gas is turned on, and the full light obtained, the adjustment of the jet not having been disturbed.

Another form of "cut off" has been devised by Mr. Oakley, but it is not so easy to manipulate as the above. It consists in fitting the plug of the ordinary jet tap with a screw, by rotating which, the gas way can be blocked, the hydrogen tap being provided with a bye-pass. In this case the gases cannot be cut off simultaneously, each tap having to be turned off independently of the other.

Cutting Masks.—This operation is performed by placing a metal template, or die, in which an opening of the desired shape has been stamped or cut, upon some black or opaque paper, and cutting round the paper with a sharp knife. An ordinary knife is useless for the purpose if it is desired to cut the mask with rounded corners, in which case a special knife, the blade of which consists of a small wheel, must be used. The wheel, being pivotted, will follow the curves of the template with exactitude, and leave a clear, clean cut. The templates may be made of zinc, or brass, and can be obtained from the dealers. It is, however, scarcely worth while to cut one's own masks now-a-days, such a variety of shapes and patterns being obtainable commercially, and probably only those with an unlimited amount of spare time at their disposal will attempt the work. The most suitable paper for the purpose is what is called needle paper, being, in fact, that which is commonly used for wrapping up the packets of that useful domestic article. Should difficulty be experienced in obtaining it from the ordinary sources it may be procured from any large stationer or paper merchant. A few words upon the shape of the mask may not be without value. Until within the last few years slides were invariably provided with either round or square shaped openings, and indeed in the case of commercial slides the practice may be said to be almost universal even now, though in one or two instances the old custom seems to be breaking down. It need scarcely be said that very few subjects look at their best when shown under such conditions, and the hideous monotony of the square or circular pictures has done much to lower the position of the lantern as a means of artistic illustration. Since the advent of dry plates a large number of skilful amateur photographers have devoted themselves to the production of lantern slides with very great success, and, mainly owing to the artistic perceptions of these gentlemen, certain innovations in the mounting of lantern slides have been effected, with the result that as much care in selecting a mask is now bestowed upon a lantern slide as would be upon the mounting of a print intended for exhibition or the decoration of a wall. There is, of course, no reason why the squares and circles should be adhered to when oblong openings will be found to suit the majority of subjects far better.

Demonstrating.—This term refers to the projection of experiments in physics, microscopy, physiology, etc., upon a screen by means of the optical lantern. To properly carry out and project experiments of this nature, a lantern with an open stage is essential. Such lanterns are termed "demonstrating lanterns," and are specially constructed for the purpose of projecting opaque or semi-opaque objects. In order to ensure success in this branch of optical projection attention to one or two matters of detail is essential. The accurate projection of a solid object possessing breadth is of course impossible, on account of the difficulty of obtaining a sharp focus of the different planes. To minimise this trouble as far as possible, a long-focus projecting lens should be employed; one of 12 in. focus will probably be found most suitable. Again, it is evident that in attempting to project a solid object, such, for instance, as the gold leaf electroscope, the projected image will necessarily be opaque, and, owing to this and various other causes, a considerable amount of light will be lost. Therefore a powerful light may be regarded as of the very essence of success, and for this reason only a mixed jet of good quality should be employed, unless, indeed, the electric light be available. In projecting solid apparatus the adjustment of the light must be very carefully attended to, and it will be found necessary to bring it much nearer to the condenser than would be necessary when projecting an ordinary slide, in order that the whole of the object may be included within the cone of rays. The projected image is necessarily inverted, but in many instances inversion does not detract from the utility of the experiment; where it does do so the difficulty is easily met by the employment of an Erecting Prism (*q.v.*). Its employment, however, is attended with a serious loss of light—in some instances as much as 50 per cent.—which with a weak illuminant is a serious consideration. The majority of the experiments capable of being demonstrated by means of the lantern will be found under their respective headings, together with a sufficient description to enable them to be practically carried out.

Splashes of Ink.

BY PENFEATHER.

AT a recent meeting of the National Association of Professional Photographers it was urged upon those assembled that they were missing golden opportunities in neglecting "process" work; that they were allowing a very lucrative business in increasing demand to pass them by to fall into other channels. This reproach applies, though in a less degree, to amateur photographers. It is true that many photo-mechanical processes are beyond the scope of most amateurs, and could only be undertaken by those possessed of ample leisure, enthusiasm, ability, and means; but to the most charming of them all—photogravure—this objection does not apply, except in the same sense that it does to all photographic work which produces a valuable result. There is nothing in the theory of the process that anyone of ordinary intelligence could fail to grasp, and the manipulatory difficulties are not greater than those which a beginner in photography has to encounter in learning to make, on a gelatine plate, a negative of a certain desired quality, and a print from the same. Most of us can remember the time when an exposed plate was something in the nature of a lottery; it might turn out a complete success, a qualified success, or a failure; and making a print was hardly less of an uncertainty. With experience we recognise that there is no chance at all about the matter, and that the result depends upon a series of operations dependent upon one another, all being made to work in harmony. The process of photogravure is, as I have said, simple enough in theory, and almost equally so in practice, and the air of mystery that surrounds it is due to the fact that until recently it has been looked upon as a *secret* process. The photographic world is greatly indebted to Mr. Herbert Denison, of Leeds, for having so freely disclosed his method of working. This gentleman, an amateur in every sense of the word, about a year ago, at the invitation of the Affiliation of Photographic Societies, delivered a series of lectures in which, in addition to describing the process in detail, he demonstrated that an etched plate is a production which entails the use of no apparatus which cannot be made at home, or acquired at a very little cost, and further that the operations are not beyond the powers of anyone possessed of an ordinary share of perseverance, and some experience in photographic work.

When the copper plate has been produced, the question naturally arises, how is it to be printed? Herein lies the only drawback to the process. Copperplate printing is an art in itself, and the methods are jealously kept as secrets by those practising it, but, like most processes in which the conditions are similar, the secrets remain secret only because it is worth the while of so few to find them out. A copperplate press is certainly a somewhat expensive affair when large sizes are wanted, but a small sized plate can be well printed in an ordiuary photographic rolling press with a little adaptation. Plenty of amateur etchers print their own proofs, and the printing process is substantially the same whether the plate has been produced by a photographic process or by the action of acids upon a design drawn by the hand. At the outset, however, the beginner will do well to have his printing done for him, or doubts may arise as to whether any defect is due to the plate itself or to the printing of it.

You, Mr. Editor, gave an excellent epitome of the process in an answer to a correspondent last week. In the interest of those who may wish to try their hands at it, perhaps you may be induced to favour us with some articles on the subject; I am sure they will be well appreciated. At the exhibition of the North Middlesex Photographic Society, held recently, I noticed a picture in photogravure by Mr. J. McIntosh, which struck me as being a delightful rendering of a very pleasing subject. On enquiry I found that Mr. McIntosh is an amateur and quite a beginner at process work; in fact, that the exhibit referred to was printed from the fourth plate he has produced. This is proof positive, if such be needed, that the process is not too difficult to be regarded as a practical one for the amateur.

SOME of us are apt to forget that the negative is only a means to secure an end, and that its merit is strictly according to the print that can be made from it; so that mere prettiness in a negative is a quality that is in itself valueless. In the earlier days of gelatine dry plates, negatives made on them were generally found to be more or less stained all over and the colour of the deposit was not such as to please those accustomed to the delicate bloom, as it was called, of wet-plate negatives. However, unattractive as they were in appearance, they printed better than they looked. Improved methods in the manufacture of the plate, and a better understanding of the conditions of development, have made it possible to produce negatives perfectly clear in the shadows, and have given us some control over the colour of the deposit, so that the aspirations of the earlier workers to produce negatives similar in appearance to those on wet plates are now capable of realization. But, unfortunately, this power is often put to an unworthy use, and there has arisen a section of the photographic community who appear to aim at nothing further than the production of negatives to be looked at as negatives. This in itself would be an innocent enough hobby, provided that the standard of beauty adopted happened to be the true one, that is, that the printing quality of the negative was the first matter of consideration. This, however, is not, in most instances, the case. The deceitful charm of clear shadows and a delicate tint are exalted as virtues, and the producer, himself misled, may mislead others to whom he exhibits his works. We all, however matter of fact we may be, have a sneaking admiration for pretty negatives, and when we are shown specimens, are liable to be tempted by their delusive sweetness to attempt to imitate them, and to forget that the proof of the negative is in the printing.

It is not, however, to be understood that all pretty negatives are bad ones. Many of the best printing negatives of our leaders are things of beauty in themselves, but, on the other hand, many of their most admired pictures are produced from negatives which certainly would never be chosen as specimens by a dry-plate maker. The pretty-negative enthusiast cannot be said to be an entirely useless member of the community. It is he who dabbles in new developers and new combinations, for the serious worker cannot afford to risk his results by employing an agent with the peculiarities of which he is unacquainted. He is usually communicative as to his experiments and their results, and in that way he does good service. When he turns his attention to making lantern slides he frequently becomes a proficient exponent of that branch of photography, for the extreme neatness and cleanliness required are just the qualities in which he excels.

IT was my fate a few nights ago to assist at a lantern entertainment given by one of our suburban photographic societies. The particular duty which fell to my share was that of passing the slides through the lantern, a duty not without its difficulties. On this occasion, however, the difficulties were added to from the fact that out of the eight sets of slides, only one set was marked correctly; four sets were not marked at all, and the remaining three sets were marked in some unorthodox fashion. This is a state of affairs that should not be permitted in a well-regulated society. It should be a rule that no slides be accepted for exhibition unless marked in the recognised way. The correct method of marking is to place a spot at each of the top corners, or a line along the top of the slide, when held so that the view appears as in nature. It follows that the slides have to be put into the lantern so that the spots or the line, as the case may be, are at the bottom and next the condenser.

North Middlesex.—On 13th ult., in the regretted absence through illness of Mr. Horsley Hinton, who was to have addressed this society, a general discussion on various topics took place. Mr. Avery raised the question whether it was allowable or true in art to put a cloud into a landscape which was photographed upon a day when there were no clouds but a clear blue sky, or whether such a sky should be simply toned down to represent a blue sky. Mr. Marchant thought it would be justifiable to put in any cloud that was suitable, but it *must be* suitable. He did not think a painter would stand at putting in a suitable cloud if it helped the picture, and why should not a photographer? Mr. Mattocks had seen many paintings with a cloudless blue sky, and if a photographer could convey the idea of blue sky he did not know why he should not do it. But it was admittedly difficult, and the next best thing was to put in a suitable cloud. Mr. Golding thought that a sky slightly toned down would, at any rate in some cases, represent blue sky, and instaneed Mr. Calland's picture in the Salon, "Orchard in June." Mr. Cox thought a man must carry in his mind the ultimate effect desired, and might do anything which would help him to gain that effect. Mr. Beadle thought that anything which would tend to make a photograph more picturesque was justifiable. Mr. Mummery said it didn't matter two straws whether clouds were present when the landscapes were photographed or not. Would any particular cloud improve the effect? That is where a man must use his judgment, and he would put a cloud in if he thought it would be an improvement. He thought it possible to get the exact tone value of a blue sky if it were required. Mr. Cox objected that you could not get the luminosity of the sky. Mr. Mummery said you could not get the luminosity of the setting sun, but you could get a tolerably correct representation of it by lowering the tone of the picture to correspond. The discussion was continued by Messrs. Forbes, Wall, Pither, Cherry, and others, the general opinion being that if a cloud would help the picture it might be put in.

BATH PHOTOGRAPHIC SOCIETY.

A MEETING was held on 6th inst., Mr. Austin J. King, President, in the chair. Formal business having been dispatched the chair was taken by the Very Rev. Monsignor Williams to enable the President to give a lecture entitled "Through the Basque Provinces." Mr. Austin J. King commenced by saying that a man must be very hard to please who cannot find much to interest him in the district which lies between Bordeaux in France, and San Sebastian in Spain. The most wonderful vineyards in the world, every varying feature of climate and soil, almost every type of vegetation and every mode of cultivation, excite the attention of those whose interest it is to know what can be got out of mother earth and by what means. The geologist marvels at the strange features of the barren lands which lie around Arcachon, and the marvellously distorted strata of the Pyrenese. The lover of English military glory may rejoice at the survivals of English domination of these fair provinces, and gaze on the redoubts, ruined bridges, and blackened walls which tell of Wellington's invasion of France at the end of the Peninsular War. The student of ethnology will find in the Basques a people more ancient than any inhabiting Europe. Does anyone exult in the glorious majesty of some huge mountain, let him wander amidst the Eastern Pyrenees and gaze on the hills hoary with perpetual snow, dressed around the base with most luxuriant vegetation. Does the fierce onconie of the mighty sea excite his fancy, let him stand on the rock-coast of Biarritz or St. Jean de Luz, and see the rolling billows of the Atlantic foaming in from the Bay of Biscay with a resistless force which hurls about vast rocks and mighty breakwaters as a child may play with shingle on a river's bank. If he cares to see nature at her best, a thriving and a happy people, and a land abounding in comfort as well as beauty, if he asks but to be allowed to *rest*, here he may spend days, enjoying idleness, as he only does who regards it alike as a rest from labour and a preparation for more. The route chosen was by steamship *Liguria*, from Liverpool to Bordeaux. The passage was not a pleasant one, rough sea, cold wind, and rain. Pauillac was reached in three days. On one side of the Garonne is the St. Emilion district, on the other that of Julien. Pauillac itself includes the vineyards of the Chateau Lafitte, which produces the costliest wine in the market. From Pauillac to Bordeaux is a run by train of about two hours. As the country is flat and there are no tunnels or bridges the railway carriages carry two stories. Bordeaux is a large city, 242,000 inhabitants, and occupies a magnificent position on the Garonne. The year has been wonderfully prolific for wine, and the difficulty has been to obtain enough casks, the appeals for coopers in the windows on the quay being almost piteous. The lecturer next described some of the customs of the casking fraternity, and the more important features of the city. Passing on to Arcachon, a seaside resort, some amusing peculiarities of the place were given. Lourdes was next visited, and many pictures were shown illustrating the buildings, the Castle in which Napoleon imprisoned Lord Elgin in 1804, the Upper and Lower Church, general views of the town, etc. The number of pilgrims, said the lecturer, is immense. They arrive by thousands, sometimes even by tens of thousands, and every evening there is a procession. To see these thousands of persons, men, women, aged old souls with one foot in the grave, and children scarcely able to walk, gentle and simple, bearing shaded candles in their hands, winding up and around the paths on the hills and mountains singing Psalms and Canticles, will produce a wondrous impression even on the most callous. Leaving Lourdes, Pau was next visited, and thence to the little seaside town of St. Jean de Luz, about twelve miles south of Biarritz and a few miles from the Spanish frontier. The district between Bayonne and San Sebastian is still peopled by the Basques. In south-western France and north-western Spain they hold their ground with a tenacity which is one of the marvels of history. These Basques seem never to have been troubled by national aspirations. The French Basques are as loyally French as the Spanish Basques are loyally Spanish. Their ambition has ever been to manage locally their own affairs. They speak a language of their own, which is neither French or Spanish, nor a mixture of the two. It is a distinct language of quite another family. Their churches are all built of one type. The men occupy the tier gallery, the women the centre. Three peculiarities are very striking in these people. The Beret, or cap, something in shape like a Tam O'Shanter, the canvas shoes with soles of jute and bound round the calf with tapes, and the walking sticks made of medlar saplings. Hand ball is the national game, played in many different ways.

The lecture, which was well attended, was illustrated with upwards of sixty photographic lantern views, both the negatives and the lantern transparencies having been specially made by Mr. King for the purposes of this lecture, and from a technical point of view they were most satisfactory as displayed on the screen. Articles peculiar to the Basques were on the table for examination after the lecture, also a large number of stereographs, to further illustrate the scenery and customs of the people.

Reviews.

Handbook on the Use of Compressed Oxygen. By Kenneth Murray, M.I.Mech.E. Published by Ede, Dearberg and Co., 40, Queen Street, Cheapside, London, E.C. Price 1s. 6d.

This book, which is written by the manager of Brin's Oxygen Company, than whom there is no one better qualified to speak authoritatively, appears very opportunely just now after the Bradford explosion, and a careful perusal of its pages will do much to allay the fears of an ever-timorous public or consumer.

It treats of the various commercial processes of oxygen making, the compression of oxygen, cylinders, cylinder valves, and other fittings, and some applications of oxygen.

This is the most valuable book published for many a day on any subject connected with the lantern, and deserves careful perusal by every amateur or professional lanternist who ever uses compressed oxygen.

The British Journal Photographic Almanac for 1894. Published by Henry Greenwood and Company, 2, York Street, Covent Garden, E.C. Price 1s.

As usual, this annual is bigger than ever, and contains numerous articles by most well-known writers on photographic matters. From the mass of chaff, however, many fat grains of wheat may be gleaned. The Editor, Mr. Traill Taylor, has a short but exhaustive article on "Micro-stereography," which, though somewhat beyond the reach of many, is not the least interesting item in the book. The frontispiece is a collotype print of Captain Abney, by Morgan and Kidd, and two capital little collotypes from Frena negatives by E. J. Beck, and another example of good collotype by Waterlow and Sons is given.

The advertisement pages form a useful index to the leading lines in new and old goods, and to many will be the most interesting part of the book.

Societies' Notes.

PRESENTATION TO MR. E. G. LEE.—At the meeting of the Northern Counties Photographic Association held on the 5th inst., under the presidency of Mr. J. P. Gibson, Mr. John Watson read a paper on lantern manipulation, with demonstration and exhibition of novelties in lanterns and apparatus, after which the chairman, on behalf of the members, presented a purse of gold, a silver inkstand, and an album to Mr. Edgar G. Lee, who for many years has been honorary secretary to the association, as a mark of esteem and respect; his retirement from the office named being regarded as a fitting opportunity for so doing. The chairman, in the course of an appropriate speech, referred to the past history of the association, pointing out that in its earlier career it had the benefit of many prominent scientists, among whom were Professor Marrico, Professor Herschell, and others. It had had three secretaries up to the time of Mr. Lee. The first to set it upon its legs was Mr. J. B. Payne, who was succeeded by Mr. Pike. Six years ago the latter, in turn, gave place to Mr. Lee, in whose time of office the association had prospered in a remarkable manner, its membership having increased from 40 to about 160. In the same period it had taken an important part in the photographic activity of the kingdom. He would, however, be glad to see the average work improved. Mr. Lee had won a reputation second to none as a lantern slide maker, having had the good sense to become a specialist. He had always been ready to, and, in fact, desirous of helping beginners. There was scarcely one who upon taking up the art had not had the full benefit of any advice Mr. Lee could give. Mr. Lee, in replying, said although retiring from the secretaryship, he would continue his active connection with the society.

A PHOTOGRAPHIC SOCIETY has been started in connection with the Architectural Association under the title of the A. A. Camera Club. The earnestness with which the new venture has been taken up promises well for a useful and successful career. The object of the club is to promote the cultivation and advancement of architectural

photography. To attain this end the following methods will be adopted, viz.: (*a*) Visits to buildings of architectural interest; (*b*) exhibitions and demonstrations; (*c*) reading and discussion of papers; (*d*) collection of architectural photographs and lantern slides. The subscription is 5s. per session, and membership is limited to members of the Architectural Association. The President of the club is Mr. J. L. Robinson, R.H.A., and the members of committee are Messrs. J. P. Clark, A. J. Roddis, E. G. Simpson, and E. W. M. Wonnacott, with Mr. Francis R. Taylor as Hon. Sec. Meetings are held at 56, Great Marlborough Street, W., at 8 p.m.

WOLVERHAMPTON PHOTOGRAPHIC SOCIETY'S EXHIBITION was opened on 2nd inst., and remains open for, probably, a fortnight. It is being held in the North Room of the Municipal Art Gallery, and, whilst being the first non-competitive exhibition of the society, is really the fourth they have initiated. The whole of the prints on view—with the exception only of three—are exclusively members' work. A large number of views for survey work are shown. The pictures are the result of but one year's work, and when the series is completed it is intended to have all the photographs duly bound and placed in the reference department of the free library. Mr. Holcroft sends a series of very fine whole-plate views, among the best of which are "Over the Hills" and "The Keeper's Cottage." The Vice-President has some capital hoar-frost pictures, taken at Kidderminster, and a couple of excellent views of Peterborough Cathedral. Mr. Gale's work is always very acceptable, and at previous exhibitions he has carried off a large share of prizes. On this occasion he has a frame of old houses in Cheshire, and Ashfield House, Much Wenlock, these being remarkably good whole-plate bromide prints, besides first-rate prints on rough drawing paper. Mr. Wight forwards a valuable collection of cattle studies, etc., with Herefordshire views printed in platinum; and Mr. Radcliffe a few interesting Welsh pictures. The Hon. Secretary sends a frame of very good prints of the Torrent Walk, Dolgelly, whilst Mr. Oakley has nine hand-camera shots of Jersey. A few good frames of Venetian views, which we think we remember having seen at one of the previous exhibitions, come from Mr. E. A. White. Mr. Taylor shows painstaking work; and Mr. Laws has a carbon print called "Playmates," and an enlargement of a picture of sea nymphs, which is a production showing a considerable amount of skill. A study of a head, by Mr. Jahn, the local art master, is technically very fine, and the posing good; and Mr. Hall is responsible for several half-plates which reveal conscientious work. Taking the photographic survey prints, we considered them as showing very meritorious progress, in view of the fact that they are the outcome of only a year's work, and that a limited number of the members have taken it up.

A PHOTOGRAPHIC SOCIETY has been formed at Trowbridge, and promises to be a successful, useful society.

THERE are a few vacancies for members in the Helios Postal Photographic Club, and ladies or gentlemen desirous of joining should apply to the Secretary, Mr. W. Cooper, 18, High Street, Marlborough, Wilts.

West Surrey.—On 29th ult. the society held one of their popular lantern-nights, when about 300 members and friends attended. Slides were exhibited by Messrs. Thompson, Guswell, and Buchanan in addition to the "Photography" prize slides.

Societies' Meetings.

Birmingham.—On 28th ult., Mr. J. J. Button in the chair, Mr. Underwood gave a demonstration on the working of gelatino-chloride papers, carrying out all the manipulations before the meeting. The demonstration, which included toning with platinum, as well as the various gold baths, was followed with great interest by the audience.

Croydon (Micro. and Nat. Hist.).—On 1st inst., Mr. Low Sarjeant in the chair. A good muster of members attended to witness an exposition of the carbon process which was ably given by Messrs. Braham and Burton, of the Autotype Company. After a brief description of the principles of the process, the method of printing was very clearly explained, together with the use of the actinometer, of which several varieties were shown. Reference was made to the continuing action which took place after the print was removed from the printing frame, and means of utilising this action was detailed. The prints in the single transfer process could be finished on paper of any surface; but the double transfer could only be satisfactorily finished on a smooth paper. The practical working of the single and the double transfer processes was then shown in the production of paper prints, opals, and transparencies, the treatment being the same in each case, only the final support to which the tissue was transferred differing. The tissue, after a short soaking in water, was well squeegeed, on to the final support in the single transfer, all the water removed, and after being blotted, placed in the developing bath of hot water. In a few minutes the portions unacted on by light were dissolved away. The print was then placed in cold water containing a little alum, and after a rinse in clean water, hung up to dry—a finished print. In the double transfer a temporary support of waxed paper or opal for matt-effects was first used. The print was then similarly treated dried, soaked again, and squeegeed on to the final support, the waxed paper being peeled off when dry.

Hackney.—On 5th inst., Mr. W. Houghton presiding. Question asked: What effect snow would have in winter as regards exposure? Reply: Disregard the glare and whiteness, and expose for the dark portions of the subject. Snow pictures are generally under-exposed. Fast plates give more density than formerly. Select a plate with a thick emulsion. Question: What time is sufficient for washing a uranium-toned bromide print? The instructions say "Wash till all yellow traces disappear." Prints had been left in a long time, and the picture nearly disappeared altogether. Reply: One must watch them carefully and take out and inspect them in daylight, and remove as soon as the last trace of yellow has gone, not forgetting the back of the paper. Question: What advantages have isochromatic plates over ordinary ones for winter landscapes? Reply: There is always an advantage in yellow light.

Richmond.—On 4th inst. a Roberts hand-camera with latest improvements was shown. A few members' slides were then shown—views of the river by Mr. Childs, Lakeland by Mr. Neville, the Rhine by Mr. Gibson, Spain by Mr. Purcell, and Switzerland by Mr. Davis, and then the "Photography" prize slides were shown.

Walton.—On 6th inst. a lecture entitled "Boston Illustrated" was given. The slides and description were the work of the members of the Boston U.S.A. The subjects were both varied and interesting, embracing relics of early Boston, scenes of the War of Independence, views of the principal streets and buildings, and picturesque spots chosen from its many parts, and surrounding scenery. Mr. W. A. Brown has resigned the position of Secretary. Mr. T. Bickerstaff, 121, Makin Street, Walton, being appointed in his place.

EDITORIAL.

SPECIAL NOTICE.—Letters requiring an answer in this column must be received by the first post on the Tuesday morning prior to publication. The Editor cannot answer letters by post except under exceptional circumstances.

F. T. CARTER.—(1) Matthew's. (2) Swift's. (3) Yes. (4) Yes, certainly. (5) No; 2½ is quite large enough.

GEO. BEVAN.—We have answered elsewhere this week pretty fully on getting lantern slides from hymns, type, etc. Probably your negatives are at fault. If not, use a slow chloride plate, expose to diffused daylight, and get the image; never mind about density, look after clear glass, and at the slightest sign of veiling, fix, wash, and if there is any veiling, slightly reduce, wash again, and then intensify with mercury till black enough.

SCIOPTIC.—We are not in favour of the multiplication of photographic societies, and would rather see you join an existing society, still, if you think there is reasonable chance of success, by all means set to work; we shall be pleased to help you as far as we can.

C. E. F.—No, not this year.

CHARLES.—We will try and lend you a plate, but just now have not a really good one, as we have had a lot of failures. Beaume's hydrometer may be obtained from J. Sanger and Son—we think you know this address—with glass, for about 2s. 6d. With regard to the use of this, however, we will by next week look you up a table giving percentages of ferric chloride, so that you need not use an hydrometer. The cost of a press is £15, and Winstone and Son, of Shoe Lane, sell them.

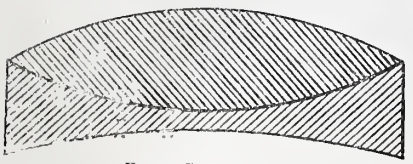
E. W. H.—We can only say it has answered in our hands. Try making it stronger.

Z. A. C.—We have no fault to find with the print you send; it is a good specimen of portraiture. This correspondent asks whether he can use two plano-convex lenses, 6 in. diameter, as used by railway companies as condensers, for enlargement. There is no objection to using these lenses provided they are good enough, but we think it will be found that they are blown and not ground, and, therefore, have a central patch of thick striated or wavy glass. If they do not show streaks or waves they could be used and should be mounted with their curved surfaces about 3-8ths in. apart, plane surfaces outwards.

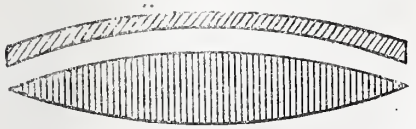
J. C. C. has a 7 by 5 R.R. and a half-plate W. A. and wishes to know whether they can be used with an Ilford exposure meter. Certainly, provided the aperture is taken into account, any lens or a pinhole may be used with any meter. Is there any advantage in using isochromatic plates without a screen? Yes, especially in the spring, autumn, and winter; it is not so apparent in the summer, but even then there is a difference to be detected. Is the time on the Ilford exposure meter for plates with or without a screen? The exposure is calculated for use without a screen, and the increase of exposure with the paler screen is three times, with the darker screen six times. What developer is a good all-round developer for Ilford goods? You cannot do better than use the universal hydroquinone developer they recommend. What length of magnesium ribbon should be burnt when using ordinary plates? Does it want to be burnt near the camera or the subject? This all depends on the subject. Now we are in the dark as to whether you want to photograph a place, a person, an insect, or an animal. What kind of shutter should be used with the meter? This depends upon the speed you want, the price you are prepared to pay, etc. Would the 7 by 5 lens answer on a whole-plate camera? This can only be answered by fixing the lens to a camera and testing it. Many 7 by 5 lenses will cover far larger plates, others will not.

In our last issue we were careful to give a correspondent precise information as to the particular position of the glasses in a portrait lens, and told the printers to use an old block to make thinge clearer, but unfortunately part of the block was reversed, making our directions absurd. The position of the glasses in a portrait lens should be as follows:—

Object.



Front Combination.



Back Combination.

T. W. Wall.—At the present moment we cannot refer to any papers except one by Mrs. Main in the Amateur Photographer for Aug. 25th, p. 126; but before next week we will look through some books and let you know.

W. H. C.—At would have been better to have gone down the bank a little, so as to have looked up stream more, and made the tree on the right finish the bridge. Clouds would greatly improve it, otherwise it is good technically, though not very artistic.

G. R. Stephens.—Send the prints up for inspection please.

More Light asks whether "there is any method of obtaining a negative of each separate primary colour of a coloured picture; if so, what should be the screen to obtain a negative of the red only, then the blue and yellow of such a picture? And where can I obtain an account of the collotype process for converting those into suitable blocks for printing from?" This is rather a big subject to treat of in this column. In the first place there are no pure primary colours in a picture. In doing this work, the first point to decide is whether you will use the colour filter in the lene or in front of the light; if the former, the best cells are only to be had from Germany, price 5s. each. The composition of the liquid will depend to a great extent upon the thickness of the screen, and the plate that is used, and ought to be determined practically by means of a spectroscope. A practical method, however, is to get the artist to send you a dab of the principal blues, yellows, and reds he has used, and then make your screens, and photograph these dabs till you get in one negative the red as clear glass, in the second the yellow, and the third the blue as clear glass. This is not scientifically correct, but it means success from the printer's point of view. To obtain the effect of the red rays, a rapid isochromatic plate should be sensitised with the chloro-cyanine, not iodo-cyanine, which is the ordinary commercial salt; and the former must be made, as it cannot be obtained commercially. A rapid isochromatic plate is used for the yellow, and a rapid ordinary plate, but not an Ilford, they are slightly sensitive to yellow. The screens, if used in or near the lens, are, for the red a solution of chrysoidine extra in glacial acetic acid and water, for the yellow a more dilute solution of the same or a mixture of eosin and brilliant aniline yellow, and for the blue a solution of malachite green. Roughly speaking, with a cell of 3·8th internal space, the strength of the solutions are, red 1:300, yellow 1:250, and blue 1:150, the exposures are for rapid ordinary plate without screen, 1; screen for blue 3, with screen for yellow 30, with screen for red 180. In our experiments we found that this meant in a well-lighted room, practically a studio, an exposure of 5½0 hours last July. A far better plan is to use two side arc lamps with parabolic reflectore, and place coloured filtere at the mouth of the paratolas; by this means the colour screens need not he so deep, and the exposure is enormously shortened. Before three months are over we hope to give an illustration and definite data as to working in this way, as we are now hard at work on the subject. Collotype printing by this processis not commercial, because the correct reproduction of the original depends upon the exact adjustment and nicety of balance of the three coloured inks—and it ie impossible to guarantee more than 5 per cent. of the prints being alike. There is no particular novelty in the preparation of the collotype plates; the most successful results so far have been obtained by the half-tint or process-block process, but we do not advise you to etart this at any rate at first. If you can make the negatives successfully there are plenty of firms who can make the blocke for you. Thie correepondent wants a detective lens which will cover eharply a quarter-plate with full aperture of *f*/6, with good depth. In the first place, so called depth of focue and a large aperture are diametrically opposed to one another; depth of focus increases with decrease of aperture, and if rapidity ie required, depth must be sacrificed. We know of no lens of reasonable price which will cover a quarter-plate with sharp definition at *f*/6. We could find no print in your letter; did you enclose one? And we do not understand what is meant by a meniscus doublet working at *f*/6, which is not corrected. All detective lenses in the market are corrected. You had better write again and explain a little more fully.

W. H. W. wishes to take a portrait in a confined space by flash-light, and wishes to know whether an Optimus symmetrical or a Enryscope would be the better lens. The Euryscope most decidedly; this works at *f*/6 and the other at *f*/16, therefore the latter is seven times slower than the former, a serious consideration in flash-light work. "Which is the most useful for architecture generally?" This is rather a difficult question to answer. Probably the Euryscope would have to be stopped down to about the same rapidity as the symmetrical to obtain covering power, but it would be a grsat advantage to have the larger aperture if required. We should, ourselves, get the Eurryscope.

Carolus asks whether there is any work published giving the various kinds of hand-cameras and also stand-cameras, with their advantages and disadvantages. No, there is no such work. Also what is the smallest hand-camera made to take quarter-plate, either magazine or for slides? We must confess to not having a list handy, but speaking from memory, we should say that for plates, Houghton's Shuttle, Optimus Minimus, and Adams' Vesta, and Newman and Guardia's Nydia for dark slides, whilst for films, Beck's Frena No. 2 and Adams' Ledo.

Raven.—(1) "When the Ilford sulpho toning bath turns pinkish, does this affect its efficiency in any way, and what causes this change?" The pink tinge is, we believe, due to a very fine precipitate of gold which is suspended in the solution. If this be so, the efficiency is impaired; at the same time, the gold being in this easily reducible state it will still tone. The change is due, we believe, to impurities introduced into the bath by the prints. (2) "Is salt an advantage in the water P.O.P. is washed in prior to toning or at any subsequent stage, and does its use require care?" The action of salt in the first washing water is to convert the free nitrate of silver into chloride at once, and there is less chance of the paper or gelatine being etained, which may occur if the first washing water without salt is not quickly changed. Provided the soaking in salt is long or the salt solution fairly strong, probably also some of the organic silver salt, citrate or tartrate is converted into chloride also, and this is said to be an advantage. If salt be carried over into the toning bath it makes the action slower and more regular, and there is less chance of uneven toning from careless working, at the same time the bath does not last so long. The action of salt after toning is to stop all further toning; beyond that there is nothing to be said in its favour. There is no particular care necessary in its use. (3) "P.O.P. prints when squeegeed to glass are liable to stick if glass is not previously prepared. Can this enable me to dispense with gelatine altogether in preparing opalines? I soak prints in warmieh water till soft, and then squeegee carefully to glass. Some done a week or so back show no sign of coming off, but I do not like to give them away if they are likely not to stay on permanently." We cannot speak from a longer experience than fifteen months, but some opalines thus prepared as an experiment then, are as firmly fixed as the first day. (4) "Bromide of potassium and other ten per cent. solutions: is this apothecaries' or avoirdupois, and are all photo formulæ in apothecaries' weights, unless otherwise stated?" Ten per cent solutions may be made by either weight, but allowance must of course be made in the total bulk. For instance, if avoirdupois weight 1 oz. be taken, the total bulk must be 437·5 × 10 minims = 9 oz. 55 m.; but if apothecaries' weight is used, the total bulk can be 480 × 10 m. = 10 fl. oz. Usually avoirdupois weight ie meant in photographic formulæ. (5) "What is an easy way of cleaning spoilt negatives?" Let them soak in a hot and fairly strong solution of washing soda, then the film will come off easily, and wash in clean cold water. (6) "A high monument taken from ground to nearly cover a half-plate with R.R. lens, people round base The top is out of focus whilst the rest is sharp. Can this he remedied without unduly lengthening exposure?" No, under such conditions stopping down would be an absolute essential. (7) "Bromides developed in hydroquinone show brownish tinge and slight veil. What is the cause and remedy with that developer?" Underexposure and forcing is one cause. A developer with a large quantity of caustic alkali or a too concentrated developer may also give it, not enough bromide is another cauee. We are always glad to help anyone, but do not save up another time, but let us have your troubles as you meet them, and we can then meet them better. Your suggestion of a visit to the large factories is one we have often carried out, and shall soon take up again after Christmae.

M. E. Lynch.—We have not at present any idea of adopting the rule you mention. What we may do is to require more prints and give a special prize at the end of the year as well.

F. Beer asks how to make photographs on tin. Presumably the ordinary tintype or ferrotype is meant. If so, these are made by the wet collodion process, on which Mr. C.W. Gamble is now writing in our pages. Ferrotype plates may be obtained in sheets from Fallowfield's, 146, Charing Cross Road; Adams, 81, Aldersgate Street, and other dealers.

J. Brown.—You must state whether you want magazine or dark slides, films or plates.

A Tourist.—Shall he very glad to see prints at your convenience.

Young Beginner has a Lancaster lens fitted with a circular disc marked 28. The disc has four holes in it, and the sizes are respectively $\frac{12}{28}$, $\frac{11}{28}$, $\frac{1}{4}$, $\frac{5}{28}$ in. "What are the uses of these holes, and is it a landscape or portrait lens, and is it quick?" Not seeing the lens we cannot, of course, say which it is, but we guess it is a landscape lens. The following information will enable our correspondent to answer his own question to a great extent. A landscape lens always has one piece of glass or lens behind "the disc and holes," a portrait lens has a piece of glass at each end of the tube. The holes are what are called stops or diaphragms, and are used to make the picture sharper at the edges, and the smaller the hole or stop the sharper the picture. At the same time exposure is increased. Place the camera on the stand and focus sharply on any distant object (the sun, moon, clouds, a church spire, etc.), then measure the distance between the lens and the focussing or ground glass, and divide this distance by the diameter of the hole. This will give what is called the *f*/ or ratio value of the stops. For instance, suppose you find the distance of focus to be 5 inches, then $5 \div \frac{5}{28} = 12\frac{4}{5}$, and *f*/12 is the value; again, $5 \div \frac{5}{32} = 32 = f/32$. The exposure is increased in the ratio of the squares of these numbers, $12 \times 12 = 144$; $32 \times 32 = 1{,}024$, or with the first stop the exposure is one-seventh of that with the other, one can thus find what would be the relative exposures with all the stops. We should advise our correspondent to buy eome simple handbook like Hodge's "Elementary Photography," price 1s., from our publishers.

Omega has unfortuuately over-printed some whole-plate Paget print-out opals, and wants to know how to reduce them. "Should this be done before toning? which is the best reducer? Ferridcyanide and hypo attacks the high lights more than shadows." We should be inclined to use the ordinary sulphocyanide gold bath, and carry toning rather far, then fix, and wash thoroughly; if the opals were then too heavy, we should use McIntosh's method of rehalogeuisation, and develop the image with hydrokinone or pyro and fix before development had gone too far. Or they could be reduced with cupric chloride or Belitzski's reducer, suggested last week in this column.

F. T. Mathias.—We shall be pleased to criticise slides for you, and can lend you slides, if you will let us know when you want them. As to your slides being below standard, we shall possibly be able to say on seeing them.

A. Mitchell.—You had better try and hire a lens from Sands and Hunter, of Cranhourne Street, or the City Sale and Exchange Rooms, Lime Street—either a Euryscope or rapid rectilinear. The two lenses you have are unsuitable. Use any of the most rapid plates, and only stop just enough to give sharp definition. Your best plan would really he to use a flash light; this is the only way we can see for you to get a good result.

Disheartened sends ue up some films, which have been intensified with mercury intensifier, and left for some hours in water; they are now much stained. There are several mercury intensifiers, therefore we are a little in the dark, but we would suggest that the best thing to do would be to let us know what intensifier was used as they look as though not properly bleached. If you will send ue four exposed films we will develop them for you, and let you have them again. You do not send name.

T. Harper asks how long the following will keep:—(1) Pyro dry in corked blue bottle. A good deal depende upon the number of times the bottle is opened, but about three months. (2) Chloride of gold dissolved in an equal number of drachms of water. If chloride of gold is dissolved in distilled water, and slightly acidified with hydrochloric acid, about 1 drop per grain, and put into a clean stoppered bottle, and kept in the dark, it will keep for a year. (3) Ammonium sulphocyanide in corked hottle. This ie very deliquescent, and if the bottle is frequently opened, it soon becomes damp and liquid. It is far better to buy a definite quantiey of the salt, add half its weight of distilled water, and make the solution measure a certain quantity. (4) Ammonia ·880 in stoppered bottle When a bottle of ammonia is once opened it is never the same strength as the original, and each time the bottle is opened some ammonia escapes. It is better to dilute with water either to 33⅓ per cent. or 10 per cent. solutions, and keep. (5) Sulphate of iron in stoppered bottle. This also depende upon the frequent opening of bottle. But with care at least two years. (6) Cyanide of potassium in corked bottle. The eame remark applies to this. (7) Ilford plates. We believe that the longest time that gelatino-bromide plates have been kept is eight years. If the plates are kept free from gas fumes, chemicals, damp, excessive heat, etc., they will keep for yeare.

F. O. P.—The faults look to us like development marks, due to the developer not covering the plate evenly. If they are not in the negative, but only in the print, we give it up, though they might be caused by the prints lying in contact in the toning or fixing bath.

VIATOR.—We must write you by post.

W. P. wants to know the best developer, and in what proportions to use, to obtain lantern slides from negatives of type or line drawings. In our issue for Nov. 24th, p. 354, we gave formulæ for making negatives of such subjects, and to make lantern slides from the same, it is only necessary to increase the bromide and reduce accelerator, so that the formula will run—

No. 1.

Hydroquinone	80 gr.
Metabisulphite of potash	120 ,,
Bromide of potash	20 ,,
Water	20 oz.

No. 2.

Caustic potash	200 gr.
Water	20 oz.

For use, mix 2 parts of No. 1 with 1 part of No. 2. It is, of course, advisable to reproduce the letters or drawings in black, and, therefore, the lantern plates specially made for black tones should be used, and clear glass obtained. Should there be any sign of veiling in the whites, immediately fix and get density by intensification with mercury afterwards. Of course, if it is an old engraving or an old manuscript, and it is desired to simulate it as far as possible, then choose a plate to give warm tones, develop to a brown tint, and after fixing and washing, stain the gelatine either with tea or coffee to give the brown tinge.

SCOTUS.—(1) "Give a list of cold-bath platinotype printing requisites." (*a*) Printing frames. (*b*) Cold-bath paper in calcium chloride tube. (*c*) Oxalate of potash for developing. (*d*) Hydrochloric acid for fixing. (*e*) At least four dishes. (2) We should choose A. (3) "Please advise best books on development, printing processes generally, and platinotype printing." Lyonel Clark's "Development," price 1s., published by Hazell, Watson, and Viney, Ltd., 1, Cresd Lane, for gelatino-chloride printing; Woodbury's book on this subject, price 2s., same publishers. There is no English book in print now on platinotype printing. Chapman, of Manchester, has issued a small pamphlet on the subject.

R. ROBERTS.—We have put off answering you till we could get a little time. (1) Hopelessly over-exposed and fogged; it might be possible just to get a bromide or P.O.P. print from this by printing under green glass. (2) Fogged in developing; would print best on P.O.P. (3) Ditto. (4) Camera not straight, over-exposed, fogged in developing; P.O.P. (5) Little too much foreground, rather harsh; use rapid bromide for contact printing. (6) Smothered with pinholes; film has partially melted in places; P.O.P. (7) Camera not straight, fogged; P.O.P. (8) Under-exposed and under-developed; slow bromide or P.O.P. (9) Fully-exposed and under-developed, should be intensified. (10) Good; will print well on anything, and make a good slide. (11) Under-exposed, too harsh; use rapid bromide. (12) A case of double exposure. (13) Under-exposed, camera not straight, wants intensifying. (14) Over exposed, shows signs of unequal development. (15) Camera not straight, but a good negative. (16) Slightly fogged in developing. (17) Good. (18) Too harsh, under exposed, and too much reducing agent used. (19) Slightly over-developed. (20) Under-developed, and shows signs of unequal development. (21) Slightly too dense, we think, but would print well on anything. (22) Rather flat, but would print well on P.O.P. (23) Over-exposed, shows sign of movement, and unequal development marks. (24) Under-developed, too much foreground, and shows streaks of fog; wants intensifying. You should try printing on gelatino-chloride paper from all of them, and the best can be used for making lantern slides from.

COLONIAL asks for information as to the Vienna Institute of Photography. There are two terms: winter, from Sept. 27th to Feb. 15th; summer, from Feb 16th to July 15th. There are classes in every branch of photography; in the first course the fee is 5 florins, equals 8s. 9d., per term; for the second course the fee is 10 florins per term. By writing to Dr. Eder, Directtor, Westhahnstraese 25, Wien VII., a form will be sent on giving full information, or if you have access to a reference library where Eder's "Jahrbuch" is kept, you will find in the volume for 1893, p. 333, full details, which are too long for us to give you here.

STOBARS asks why some prints treated exactly all alike should have stains appear in some and not others? Those stained were kept in France, the others in England. Climate is probably the reason, a damp, warm climate would cause printe to fade more quickly. "Why, when I took large waves in the south of France, bright sunlight, and clear focus with snap-shot shutter and aperture of *f*/8, should the negative be clouded all over?" Over-exposure probably; under the above conditions a shutter would have to work very quick, or else the lens be stopped down, as the light, even in England, is very bright at the seaside, and in the south of France much brighter.

F. PARTRIDGE.—We have found a box with some lantern slides in from you. You would find it far better to abandon daylight altogether and use magnesium ribbon, and having once found the correct exposure for one negative you would have some guide to others. We should say your plates were under-exposed and forced in developing, add more bromide to your developer; and if you use daylight, give longer exposures. By all means get the Ubiquitous, not the other.

CROWN asks us whether we consider the following a good mountant:—One lump of sugar, 2 drm. of methylated spirit; make 1 oz. of starch into a paste and add sugar and spirit. This is delightfully vague, but, anyway, it would only be fit for use when fresh made as the sugar would soon cause fermentation and acidity, and even when fresh the sugar would, we should think, prove detrimental, as it is hygroscopic, and would, therefore, always attract moisture. Will we lend a quarter-plate photo which has taken a prize, so that our corrsspondent may see how they are mounted, right colour and subject. Certainly, but the colour and mount should be chosen for each picture, as some subjects look better in one colour than another. The subjects we fix. "The address of a firm who sell quarter-plates to take positives instead of negatives." There are no glass plates, but Fallowfield, 146, Charing Cross Road, sells ferrotype plates for positives.

J. D.—We shall be pleased to loan you some slides for Christmas. Write or call about a week before you want them. (1) There is far too much uninteresting foreground, and the river wants breaking up with a boat or figure. (2) Spoilt by the foreground being out of focus. As the things would not move you might have stopped down to any extent so as to get them sharp, otherwise there is nothing to complain of.

HANDWORKER.—(1) Yes, we think the focus, 5½ in., quite long enough to give pleasing perspective. If the swing-back is used excessively *f*/64 would have to be used, but for very slight swing *f*/16 would be sufficient. Hardly, we think; the plates named are about as rapid as any in the market. There is a chance of rubbing, but very small.

STEREO is using Chadwick's stereo camera and single lenses, and is fairly satisfied with his results, but his friends tell him he would do better with a pair of R.R.'s. Unless architectural subjects are to be taken we should say that a single lens will do all that is required, and even then the distortion would not be apparent if it existed. Rapid rectilinears will not improve the quality of the results; the only advantage they have is a larger full aperture and freedom from distortion. The actual differences between the lenses is hardly apparent; we should advise No. 1.

PERPLEXED has an R.R. lens of 5½ in. focus, and wants to know if there is any means of using it as a fixed-focus lens on an ordinary camera. Certainly all lenses can be used at fixed focus, and with short focus lenses this is very simple. Merely rack out to the equivalent focus and all objects within a certain distance will be in focus. To find this distance multiply the diameter of the aperture by the focus, and divide by the greatest allowable error, add the focus and divide by 2,

$$(5\tfrac{1}{2} \div 8) \times 5\tfrac{1}{2} \div \tfrac{1}{100} + 5\tfrac{1}{2} \div 2 = 10 \text{ ft.}$$

(2) "Is good drawing paper, such as Reeves' or Whatman's, suitable for mounting prints on?" Yes, the only objection is that it is thin. Mounts can be obtained from Hannam, Soho Square, with a rough surface. (3) "Can you give me a formula for eikonogen and hydroquinone suitable for Ilford plates, and is it as good as pyro for snow scenes?" Chapman's eiko-cum-hydro is the best we know—

I.

Quinol	40 gr.
Eikonogen	120 ,,
Sodium sulphite	480 ,,
Citric acid	20 ,,
Distilled water, to make	20 oz.

II.

Potassium bromide	5 gr.
Sodium carbonate, pure..	60 ,,
Sodium hydrate	30 ,,
Distilled water, to make	20 oz.

Mix in equal proportions. This is, we think, easier to use for snow scenes than pyro, as giving less harshness.

A. H. SEMARK has a whole-plate camera and a half plate lens which will more than cover. "Can it be used?" Certainly. The only disadvantage is that it may have to be stopped down a good deal to cover sharply, and it would be rather a short focus, and therefore include a wider angle than is at all times desirable. Our correspondent has also bought a portrait lens, and wants to know whether it is a particular maker's who advertises that all his lenses bear his name. If the lens does not bear the maker's name we should say there is a chance of its not being his, but we cannot possibly say definitely; the only thing to do is to send the lenses to the maker and tell him all the circumstances, and ask his opinion. "Can a portrait lens be used for outdoor work and for enlarging?" It could be used for outdoor work if well stopped down, but would be liable to show a flare spot. The back combination might be unscrewed and the front used alone as a single lens if desired. It could be used for enlarging. He also asks whether he could take instantaneous pictures with his half-plate single lens on his whole-plate camera. This would depend to a great extent on the light and the stopping down required.

KROC.—(1) We should say not washing the print properly was the cause of fading. (2) If the camera will not rack out far enough, the only thing to do is to fit the lens on to a conical extension, or else rack out to the greatest extent, and move the camera back from the print till it appears sharp on the screen. (3) Rapid plates will give you better results, the relative rapidities are, PLœnix 1, xxxxx, 2½, therefore the exposures are in inverse proportion, so that the 12 sec. would be reduced to 5 sec. (4) Is there any legal objection to an amateur copying and enlarging photos of his friends, not for sale, but merely for giving away? If the original was from a negative taken by some one else, it could not be copied and enlarged, except with permission of the operator. (4) "What is the strongest oxalate developer that may be used for bromide paper?" This depends upon exposure to a great extent, but the strongest developer is to be made by dissolving

Neutral oxalate of potash	2,600 gr.
Ferrous sulphate	975 ,,
Citric acid	100 ,,
Distilled water, boiling	20 oz.

Or, by dissolving

Neutral oxalate of potash	1 lb.
In distilled water	48 oz.

and adding dry ferrous oxalate till considerable quantity remains undissolved, then letting this stand for a week, shaking occasionally.

W. JAMES sends us a wail on French *v.* English lenses, and says he is "surprised that English lens makers do not place cheaper lenses on the market to compete with those of French manufacture; at least half the lenses, probably more, used in England are of French manufacture. The reason for this is very apparent. The French lenses are 50 to 80 per cent. cheaper, and are really of excellent quality for general use. I have had experience of about five French lenses, ranging in size from quarter-plate to 10 by 8, and had no fault to find with them, though they had even no maker's name on them. I compared a half-plate French lens, costing 28s., with one of English make, costing £3 10s., and could not see any difference in the result. Do our English makers charge for their name? Even granting that the French lenses are somewhat inferior to our best English lenses, they are yet quite useful and satisfying enough for most photographers' ordinary use, and I cannot see why our English makers do not place a cheaper series on the market, and keep the trade at home, for it is a surprisingly large trade, and in time, if not competed with, is bound to materially injure the English makers." This was sent to us in the form of a letter for publication, but we have exercised our editorial right to insert here, and answer it ourselves. With regard to the statement that at least half the lenses, probably more, used in England are of French make, we should like to know how our correspondent is so positive of this fact. Can he give us the result of the latest lens census as made by him? If not, he has no right to make the assertion so positively, as it is not a fact he knows or can prove, but an unsupported assertion. The French lenses are 50 to 80 per cent. cheaper. This again is a statement which is an assertion without any proof. Before we admit it we must have definite figures. We make the contrary assertion that it is untrue, particularly the 80 per cent. The statement that he has had experience of five lenses proves nothing. As to his comparison, this is worse. A comparison to be of any value must be made by a competent unbiassed authority with special instruments, and so far we have no proof that our correspondent is an authority, unbiassed, or has the instruments. English makers do not charge for their name. This is one of our assertions. Granting that the French lenses are somewhat inferior, this is a bad argument. Our friend is not a good counsel, evidently. Why do not English makers place a cheaper series on the market? Because they know their own business better than our correspondent. Now let us have a few facts. There are three, if not four, grades of French lenses; which is our correspondent going to take for comparison? It is a well-known fact, admitted by everybody who knows, and easily proved, if documentary evidence is admissible, that many French lenses are made from glass roughly moulded by means of brass or iron moulds and heat. They are then polished, a dozen or so at a time. English makers prefer to use the block glass, and ground generally singly. The following little table of the time consumed in making one lens may interest our friend:—

Cutting four discs from the raw material	8 hours.
Roughing and coarse grinding according to hardness of glass and depth of curves for each surface, twenty minutes	2¾ ,,
Fine grinding for each surface, three quarters of an hour ..	6 ,,
Polishing for each surface, two hours	16 ,,
Centering, setting, and blacking, etc.	8 ,,
Total	40¾ ,,

This at 8d. per hour, without reckoning for brass, preparing tools, calculating curves, etc., gives a big profit, does it not? We have taken up a good deal of space, but this class of complaint is one which we too often meet with, and is founded on assumptions and ignorance of the true facts of the case. Our friend is a judge who has summed up and given the verdict without knowing the law, or justice, or bearing evidence.

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OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

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EDITORIAL DEPARTMENT—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

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"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received by the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed in the paper, and competitors must send in all the forms with their lantern slides or prints.

The practical joker is abroad again, and one of our contemporaries has been the subject this time. It is an advantage sometimes to have a little knowledge of chemistry, though even this may fail to detect such a hoax as the one perpetrated last week, when there is a great pressure of work.

Our contemporary prints "Amongst the Societies," a report of the formation of a new suburban camera club, and in which occurs the following passage:—

"Dr. Burton Coxe, who was received with applause, said he had lately been experimenting on the lines of Col. Waterhouse, with the addition to the developer of various little-known substances, and if he had nothing revolutionary to tell them as to his results, he had certainly had some interesting experiences to relate. Perhaps the most promising effects had been produced by the addition of hydroxyl-monohydride in varying proportions. He found that a large addition had a decided slowing action, but in moderate quantities its action was very beneficial, especially in enabling the developers to flow freely, and he should now be very sorry to develop a plate without it. Perhaps the best way to employ it was to use it to make up the stock solution of pyrogallic acid with the addition of sulphite. It might be produced by treating the anhydrous hydroxyl with nascent hydrogen, the reaction at a high temperature being very energetic, and the result being the pure compound."

To those not sufficiently versed in chemical terms that hydroxyle is the term given to the group O H, and therefore the description of the treating "anhydrous hydroxyl with nascent hydrogen" is delicious, because, assuming that "anhydrous hydroxyl" existed, nascent hydrogen would at once convert it into $HO+H=H_2O$ or water.

Our contemporary intensifies it by editorially commenting on it, and says, "Dr. Burton Coxe has been experimenting with hydroxyl-monohydride in development, and thinks very highly of it." So do we.

The *Studio* this month continues its articles on photographic matters, with an article on "Photographic Portraiture," which is an illustrated interview with Mr. H. Hay Cameron, the son of that Mrs. Cameron so well known in the earlier days. There are also three reproductions from Salon pictures, including Mr. Rowland Briant's painfully fuzzy thing "The White Robe of Winter."

Touching this and kindred pictures in conversation with a prominent photographer this last week at Bristol, the subject cropped up, and the question was asked if this is how some of us see nature: do we see people's faces in this way? But no satisfactory conclusion was come to.

WE have received several applications for entry forms for our "Holidays with the Camera" and "Autumn" competitions, and we shall be glad if all intending competitors will again take notice that we shall send out no more entry forms—they will always be printed in the paper. The entry form for the "Holidays with the Camera" competition appeared in our issue for November 24th, and the other appears this week p. iii.

THE Exeter Amateur Photo. Society will hold an exhibition of photographic work at the Art Gallery of the Albert Museum in Easter week. Twenty silver and bronze medals will be offered for competition. Further particulars will be published shortly.

THE Newcastle-on-Tyne and Northern Counties Photographic Association will hold an International Exhibition from April 13th to 28th, 1894. There are thirteen open classes with silver and bronze medals. The judges are Messrs. Wm. Crooke, F. M. Sutcliffe, and G. E. Thompson. We shall publish the rules and classes next week.

WE would again remind our readers that if they wish to become members of the Central Photographic Club they had better send in their names soon, as when 300 members have been elected an entrance fee is to be charged. To-night, 22nd inst, Mr. J. Sterry will expound in plain and simple language the Hurter and Driffield system of speed determination, and Mr. Cadett will also take part. Mr. Fall's pictures are also on view, and are well worth careful study. Visitors are always welcome, and on Friday nights there is always something good and interesting.

WE regret that pressure on our space and indisposition have caused us to hold over several articles, which, we hope, will be in our next—R. and J. Beck's quarter-plate Frena, a note on standard screws by Messrs. Taylor, Taylor and Hobson, and Mr. Burdick's air brush, the latter also waiting for an illustration. This last little novelty is well worth seeing, and Mr. Burdick is giving free demonstrations every morning from December 27th to January 5th, at the offices of the Photogram, Memorial Hall, Farringdon Street, E.C.

Flotsam and Jetsam.

THERE are three respects, says a pleasantly-written article in a recent issue of the *Telegraph*, by a well-known hand apparently, in which the children of this generation are much better off at "merrie Christmas" than those who lived about the time of the accession of Queen Victoria: they have Christmas-trees, Santa Claus, and illustrated books.

CHRISTMAS-TREES, according to this article, were only introduced into England between fifty and sixty years ago. The custom came from Germany, and was at first looked upon as a "new-fangled foreign device," a strangely different regard from that which the children now pay to it. Santa Claus, though centuries old in Germany and Holland, is said to have only been naturalised "within the past twenty years or so in England."

As to this statement we have considerable doubt. Our fathers have told us otherwise. The tradition of Santa Claus, or Saint Nicholas, as he was called in the old legend, is familiar to them in their childhood, and must therefore be at least as old as the Christmas-tree custom.

BUT about the third there can be no doubt. Christmas literature for the young is a new and a distinctly delightful boon. Young people in the times of the Georges had no such charming presents, and it was mainly through the growth of lithographic printing and the revival of artistic wood-engraving that the change first began.

BUT, as the article points out, it has been enormously accelerated, and the output of Christmas books has been greatly increased by the introduction of various processes for reproducing book illustrations. In these photography has rendered incalculable aid.

THUS, perhaps, it has in some measure repaid the little ones for the miseries it has inflicted on them in the process of sitting for their portraits. According to the *Telegraph*, most artists are in favour of the process system, because their own handiwork is thus reproduced with absolute fidelity, and not translated by another hand.

To such an extent has this preference gone that photographic and electrotype processes have now largely eclipsed the work of the engraver and of the lithographer. As far as the children are concerned, this is a welcome change, no doubt, for the variety and extent of the output are thus increased.

Two unfortunate photographers are Lieutenant Jean Degony and Jacques Delguey-Malevas, of the French Navy. It may be remembered that their arrest at Kiel some time back was mentioned in these columns. They had hired a British yacht, and displayed a most curious desire to photograph and sketch the fortifications and defences on the German coast near Kiel and Cuxhaven.

IN fact, they were spies, apparently on their own account, and they had pressed photography into their service. Numbers of prints of German fortresses were found concealed on the yacht when they were arrested. Now they are laid by the heels, the one for four and the other for six years, in a German fortress. Let us hope the use of the camera will still be permitted them.

"CAMERA," of the *Glasgow Evening Times*, reports that photography has rendered another important service to astronomy by the record it has secured of the path of a meteor. This record has shown that meteors often travel in a path exhibiting considerable curvature, a fact which had not been observed before.

ANCHORITE.

Munster.—On 4th inst. a demonstration on the "Ethoxo" light was given by Mr. W. Ringrose Atkins, F.C.A. Mr. John Day, President, occupied the chair. Mr. Atkins, in the course of his remarks, explained the manner of producing lime-light by the combination of oxygen and hydrogen gases, and described the different kinds of "jets" used. He then referred to the light generated by passing oxygen through the vapour arising from methylated ether, or benzoline, illustrating his remarks by an exposition of Lawson's New Patent Ether Saturator, the construction and working of which he explained by means of photographs taken by himself, and projected on the screen by means of the identical instrument itself. This appliance gives a beautifully brilliant white light, undoubtedly surpassing in brightness the usual oxy-hydrogen safety jet, and its manipulation is extremely simple. Mr. Atkins stated in continuation of his remarks that the convenience of the saturator in places where no hydrogen can be had would be very great, and further that he considered that the amount of danger which undoubtedly existed in some of the older forms of saturator was minimised in the case of the new instrument, which he used in conjunction with one of Messrs. Riley Bros., of Bradford, "Prestantid" lanterns, with a lens of six-inch focus. Mr. Atkins then exhibited a number of photographic slides made by himself and Messrs. Scott, Bennett, Egan, etc., which were highly satisfactory. A discussion ensued in which the President and Messrs. H. Lund, of the Chemical Department of the Royal University; A. Newsom, R. S. Baker, R. M'Kechnie, J. Bennett, etc., took part.

Letters to the Editor.

THREE-COLOUR TYPOGRAPHIC PRINTING.

Sir,—If Mr. Joseph E. Lawrence will call upon me, and see a "fruit piece" (from nature) in the photochromoscope, he will not misunderstand me when I say that I should be ashamed to see my name coupled with such a colour reproduction as that to which he calls attention in his letter on page 394.

It is, undoubtedly, what would be called a specimen of "good printing," but the result is certainly no better than I got twelve years ago, and is altogether too crude an effect to be in any way satisfactory to anybody who knows that an almost perfect illusion of nature is possible in a three-colour print, when those conditions are realised which theory calls for.

Any process of three-colour printing that will not turn out large editions of prints that at least compare favourably with the conventional chromo-lithograph does not even interest me.—Yours, etc.,

Northumbria House, Fred. E. Ives.
116, Charing-cross-road, W.C.

* * * *

AN APPEAL.

Sir,—As a reader of your valuable paper I venture to solicit your kind assistance for my very poor large scattered agricultural parish.

I am at amateur photographer and lanternist, and this winter have begun a series of free village lantern lectures. I have had (1) The Holy Land, (2) The Cape, (3) Italy. Will any kind readers of your paper send me some lantern slides to lecture with, as we are all too poor to hire or purchase? If any enthusiastic lanternist has spare slides, I shall feel most grateful if he will give them for use in a very poor village.

It struck me that as Editor you may possess a large number of slides that you do not require or use, but which might be worked up into a lecture, say "Scenes in Many Lands."

I shall be charmed and grateful if my appeal is answered, and I will pay carriage by post, etc.

I have some slides to pass on to some similarly poor parish that I have well used up here. We want an amateur exchange for slides.—Yours truly, H. R. Harrison, Vicar.

Snaith, R. S. O. Yorks.

Photo-Zinco in Half-Tone.*

By W. T. Wilkinson.

Nearly all beginners at photographic process work commence by making their negatives on dry plates, and although I have at various times, whilst not exactly advocating their use, certainly encouraged it, now, once having learnt wisdom from experience, I cannot find compensating advantage accruing from their use. The chief argument in favour of dry plates put forward by most, is the old one of the fickleness of the silver bath; that, I take it, is a notion left over from the time when the wet-collodion process was in general use, and when it was so necessary, in order to obtain the utmost sensitiveness, to work the bath in such condition that even a variation of temperature would cause fog. For photo-zinco this is all changed. A large amount of acid being requisite to ensure clearness of lines gives the desired stability to the bath, and consequently freedom from fog and uncertainty.

This being so, it is possible to make three negatives finished and ready for printing in less time than one dry-plate negative can be done, so the sooner experimentalists abandon dry plates and try the wet process the better for results certainly, and economy.

The Grained Screen.—This is a very important piece of apparatus, and I have here, by favour of Messrs. Penrose, four specimens of Levy's ruled screen, and from Percy Lund and Co. a specimen of Woolf's reproduced screen; as far as results go, each is as good as the other, although some operators insist that the Levy is the best, and others again, that Woolf's is; so for my own part I would say, if you have either you can go confidently to work and laugh at any one who says the other (*i.e.*, the one you have *not* got) is the best.

From the thickness of the screens it is obvious that some provision must be made in the dark slide for them; in all dark slides now made for the work this is managed by making the dark slide extra thick, leaving a space of from three-eighths to five-eighths in front of the sensitive plate and behind sliding shutter, and in this recess placing a carrier to hold the screen.

The next step to take will be to make a print on the zinc, this being usually done either in bichromated albumen or in bitumen, the albumen process requiring a less exposure to light than the bitumen; but it has the drawback in requiring rolling up with ink before etching, and this is an operation requiring very great skill and care; this can, to some extent, be got over by dusting over with resin and warming the plate, which gives a resist as hard as bitumen.

Bitumen is best dissolved in chloroform, and the zinc plate sent round will show you just about the proper thickness the film of bitumen must be; if at all thicker, there will be a difficulty in getting sufficient exposure to penetrate the film to the metal, hence it will float away under the turpentine used for development.

Specimens of straight polished zinc as used for line work, and of round polished zinc as necessary for half-tone prints, are sent round for comparison.

I have also here specimens of the rollers used, viz., a nap roller and a glazed one. The nap roller is the ordinary lithographic roller, the grain of the leather being outside; the preparation of such a roller is very important, as, unless it is properly done, the roller will be useless; a roller in the condition now shown you (*i.e.*, quite new) is worth 15s., but if it was in really good working order would be cheap at 25s.

This roller is a glazed one, and is used to ink up the surface of the plate, only, as you can see, the surface is hard and smooth.

Etching a half-tone block requires great skill and care, and calls for ability to use the brush in order to get the best effects, and unskilful use of the brush will quickly spoil what would otherwise be a good block.

The use of albumen and bitumen for printing on the zinc is now threatened with supersession, a process called Enameline—of which I now pass round a specimen—bidding fair to be better adapted than either for the purpose.

The process is a secret one (being of American origin), so I cannot presume to even make a guess at it, but I will pass round another specimen done by a process of my own, which has a very similar appearance to the other, and is done with a mixture of isinglass, white of egg, and bichromate.

The process is in itself very simple; a zinc plate framed in a weak bath of nitric acid is coated and whirled, then dried, exposed to light under the negative for from three to five tints of a Johnson actinometer; on removal, the image can be seen quite bright; it is next immersed in cold water to remove the bichromate and unaltered albumen, and dried. It is now carefully examined under a powerful glass, and if the whole of the grain can be seen sharp, and without any rottenness in any part, the plate is ready for burning in, an operation done on a hot plate or in a Bunsen flame; here the image gradually develops until a beautiful blue black is attained, when it is ready for the etching bath without any rolling up of any kind, and, when the etching is complete, the plate is mounted and printed from with the enamel image on it intact. This method is only used for half-tone blocks, as the ordinary albumen process gives all that is necessary for line work.

* Read before the London and Provincial Photographic Association.

Recent Patents.

The following list of recent applications for patents relating to photographic and kindred subjects is compiled for us by Mr. Mellersh-Jackson, patent agent, 75, Chancery Lane, London, W.C., from whom further information may be obtained.

No. 23,395. "A micrometer." J. A. Sinclair. December 5th, 1893.

No. 23,396. "Improvements in the manufacture of lenses." A. Clay. December 5th, 1893.

No. 23,490. "Improvements in photography and in photographic cameras." A. C. Ponton. December 6th, 1893.

No. 23,607. "Tinted or coloured covers for photographic transparencies." W. F. Butcher. December 8th, 1893.

No. 23,642. "Improvements in photographic dark slides." G. F. Horne. December 8th, 1893.

No. 23,670. "Apparatus for exposing successive photographic plates, magic lantern and other slides." B. Acres. December 8th, 1893.

No. 23,723. "An improved screen for lantern projection." T. Mayne and G. Prescott. December 9th, 1893.

Ealing.—On the 7th inst., the President, Mr. H. W. Peal, in the chair, an exhibition of members' lantern slides was given by Mr. T. Simpson, assisted by Dr. Gibbons. The slides first shown were the work of Mr. T. Crisp, the Hon. Sec., and Mr. Murphy. Mr. B. E. Peal furnished half-a-dozen choice views. Mr. Roland Whiting showed some slides of microscopic objects. The exhibition concluded with an admirable series of slides by the President, reproducing the illustrations in David Roberts' "Egypt and Nubia." These slides, which elicited frequent applause, were notable not only for their technical excellence as photographs, but for the artistic beauty of the original pictures.

EDER'S HANDBOOK
OF
Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER X.
THE ACTION OF LIGHT ON BROMIDE, CHLORIDE, AND IODIDE OF SILVER EMULSIONS,

WITHOUT AS WELL AS WITH DEVELOPMENT, THE FILM BECOMING INSOLUBLE IN LIGHT.

(I.) COLOURATION WITHOUT DEVELOPMENT.

THE colouration (greyish-violet) of gelatino-bromide and chloride of silver in direct light takes place tolerably quickly but more slowly in "unripe" bromide of silver, than with highly sensitive.[1] Silver sub-bromide ($2AgBr = Ag_2Br + Br$) is formed in the beginning and finally with continued exposure, when a strong colouration is obtained, metallic silver. This image is, however, only superficial, and disappears almost entirely in fixing. After fuming with carbonate of ammonia the plates become coloured somewhat quicker and give somewhat denser prints; if ordinary gelatino-bromide of silver paper—*e.g.*, Eastman's paper—is bathed with a 10 per cent. solution of nitrite of potash for ten minutes, it darkens quickly in the light and printed-out matt images can be obtained without employment of a developer (O'Farrell, Eder's "Jahrbuch of Phot.," 1888, p. 476). An emulsion which is prepared with excess of silver nitrate blackens very quickly. Probably this is due primarily to the mixture of gelatine and silver nitrate, and only secondarily the bromide of silver, as is the case with salted and silvered albumen paper. If an emulsion prepared with considerable quantity of excess of silver nitrate is fumed with carbonate of ammonia, the sensitiveness rises considerably; such plates will not keep. Chloride of silver with excess of silver nitrate or similar salts is more suitable.

Emulsions with considerable quantities of excess of silver nitrate are not inclined to putrefy. By keeping for a long time, however, even with complete exclusion of light, the silver nitrate is reduced by the gelatine, and the emulsion, dissolved in water, as well as the dry plates prepared with the same, become brown after several weeks or months.

(II.) GELATINO BROMIDE, IODIDE, AND CHLORIDE OF SILVER WITH DEVELOPMENT.

Silver sub-bromide is also formed with a very short action of light. Its hypothetical formula is generally assumed to be Ag_2Br; it is blackened by developers. The invisible or latent image is formed of silver sub-bromide. Since gelatine is a "sensitiser" it acts favourably on the formation of the latent image.

It may be noted here that the question of the composition of the invisible or latent image is very much disputed, but that strong support to the sub-bromide theory is given by the experiments of Guntz,[2] who prepared silver sub-fluoride, Ag_2F, as a yellow crystalline powder by heating a solution of silver fluoride and finely divided silver in a sealed tube at a temperature of 90° or by electrolysis of a saturated solution of silver fluoride, using silver electrodes. From the sub-fluoride silver sub-chloride, sub-iodide, and sub-sulphide have also been prepared by Guntz.

[1] According to H. W. Vogel, the ripened highly sensitive bromide of silver is coloured in the light quicker than the unripe (*Phot. Mitth.*, vol. 19, p. 91), whilst Monckhoven (*Phot. Mitth.*, 1881, vol. 16, p. 106) upholds the opposite. Dr. Eder's experiments confirm Vogel's statement.

[2] "Compt. Rend.," CX., 1337-1339, CXII., 861-862, and 1212-1213.

(III.) ACTION OF GELATINE AS A SENSITISER.

It is by no means immaterial whether bromide of silver is distributed in an *indifferent substance*, such as collodion, or in an *easily oxidisable, bromine-absorbing organic substance*, such as gelatine. Gelatine or similar substances, such as starch, agar-agar, and albumen, promote enormously the sensitiveness of bromide of silver. A gelatine emulsion prepared with excess of potassium bromide, Dr. Eder found after twenty-four hours' digestion at 35° C. *at least* twenty to forty times more sensitive than a similarly prepared collodion emulsion without "preservative," and six times more sensitive than one prepared "with preservative" (tannin, etc.), or addition of some silver nitrate. Gelatine is a true sensitiser for bromide of silver. Repeated experiments with collodio-bromide of silver have shown that the same becomes noticeably more sensitive if it is coated with a thin solution of gelatine, by which the sensitising action of the gelatine is proved. Gelatine is also, according to Vogel's sensitiser theory, a sensitiser in the truest sense of the word, because isinglass and gelatine, as the analyses of Knop[3] prove, chemically combine with 20·5 to 29·9 per cent. of bromine after two to four days' digestion with bromine water at ordinary temperature, and give bromised organic compounds as a yellow powder. Besides, the *water* of the gelatine emulsion plays a great part in the increase of sensitiveness. Without doubt the *intimate envelopment* of the bromide of silver by an oxidisable body (gelatine, etc.) acts very favourably on the sensitiveness to light. The explanation of the lower sensitiveness to light of collodion emulsion being due to the lower penetrability of the collodion skin by the developer, in comparison to the gelatine, is insufficient, because a pyrogallol developer mixed with alcohol penetrates the collodion film more easily and quickly than the gelatine, and in spite of that an image appears on the latter after a much shorter exposure.

On the action of other sensitisers with gelatine we have already spoken.

IV. THE INFLUENCE OF THE PROPORTION OF WATER IN THE GELATINO-BROMIDE OF SILVER.

Dr. Eder found that gelatino bromide plates swollen with water with subsequent development of image, were not more sensitive to light[4] than when dry; on the contrary, the light images were fainter, probably because the rays of light were prevented from penetrating by the water. Wet gelatine plates develop and fix more slowly than dry.[5] Since the plates when dry behave differently to the moist, especially with reference to the vigour of the image, gelatine plates should never be tested, for their qualities before drying, because emulsions may easily be deduced. Since the wet gelatine plate is five to six times thicker than in the dry state, the surface of the film is frequently moved from the plane of sharp focus; besides, the surface of the swollen gelatine is very uneven, much more uneven than the dried film. On these grounds it is evident why out-of-focus and thin images are obtained on wet gelatine plates. It is characteristic that gelatino-bromide plates in the wet state are more opaque than when dry; whilst with collodion emulsions the reverse is to be seen.

[3] The analyses are accurately described in *Chem. Centralbl.*, 1879. Still earlier was the fact known that bromine water produced a flocculent precipitate in warm solution of gelatine. S. Weyl's treatise, *Chem. Centralbl.*, 1878, p. 193.

[4] Pure bromide plates (*e.g.*, acid emulsions boiled for a short time) are mostly more sensitive after drying than before; the increase during the drying can amount to 1½ to twice as much. Yet Dr. Eder has tested mixtures of iodide with bromide emulsions, which were much more sensitive immediately after setting than when dry.

[5] This applies generally. Many plates, however, develop quicker when wet than dry, *e.g.*, this is often the case with highly sensitive ammoniacal emulsions.

(V.) Development, Destruction, and Spontaneous Retrogression of the Latent Image.

The invisible latent image can be developed by strong reducing agents, or so-called developers, which only reduce the silver sub-bromide, but not the normal bromide to metallic silver; such developers are alkaline pyrogallol, ferrous oxalate, etc.

The latent image is destroyed by substances, which supply to it again, bromine, iodine, or chlorine; for instance, bromine and iodine tincture, ferric chloride, cupric chloride, mercuric chloride, or auric chloride; further by nitric acid, by oxidising substances such as peroxide of hydrogen, bichromate of potash, by iodide of potassium, concentrated solution of bromide of ammonium, ferridcyanide of potassium,[1] hydrobromic acid (hydrochloric acid acts less), ferric oxalate; finally by sulphuretted hydrogen, coal gas, phosphoric acid, which strongly fog the bromide of silver.

Bothamley[2] gave a very complete summary of the knowledge of the latent image and the results of some further experiments. He coincides with the opinion as to the gelatine acting as an energetic sensitiser, and being the cause of the greater sensitiveness. The latent image is destroyed by potassium bichromate without any excess of soluble haloid, but the strongest nitric acid will not destroy it in the gelatine emulsion, nor in collodion will a 25 per cent nitric acid destroy it in twenty minutes. Twelve per cent. hydrochloric acid does not destroy the latent image on a gelatino-chloride plate. Ten per cent. solution of potassium bromide does not destroy the latent image in twenty minutes. He defines three distinct stages in the formation of the image: (1) the latent image, formed by light and due to photo-chemical action; (2) the primary or fundamental image, formed by the developer on the primary image, partly photo-chemical and partly chemical; (3) and the developed image, formed by the developer on the primary image and the unaltered silver bromide, and probably electro-chemical. Potassium iodide does not destroy the latent image, but only arrests its growth at the first stage. Gelatine emulsion plates, in which the bromide of silver has been prepared with excess of soluble haloid, keep after exposure for a very long time unaltered. This observation Seligmann and others made. A positive statement cannot be made of the time during which an exposed plate can be kept. It has been determined that many months may elapse between exposure and developing, without the image suffering in the least. This fact is satisfactorily known, and many tourists develop their dry plates after some months, when they again come into civilised quarters. H. W. Vogel[3] found that gelatine-bromide plates, as well as his collodio-gelatine plates, had suffered no loss, indeed, in details, but in intensity, after keeping from four to eight weeks after exposure in a half-opened box, which was kept in the dark-room. Noel[4] found that the invisible image had completely disappeared after seven months, on collodion emulsion even after two months. Tunn[5] also observed in his work in New Zealand a tolerably short keeping power. Other observations of a longer keeping power are as follows:—Wight[6] exposed a Monckhoven plate, and developed it after three years; the plate showed some decomposition, still it gave an image. The margins of the plate had become partly black. Berwick[7] developed plates two years, Dr. Heid[8] plates of his own make one year after exposure, which had been exposed by Dr. Pollack on his travels in Persia, and Dr. Langer in Arabia. Henderson[9] could still develop the image on plates eight and a half months after exposure as well as on the first day. Chamberlain[10] states he has successfully developed isochromatic plates two years and three months after exposure.

The contradictory statements above are explained by the action of the air in bad packing, or the method of preparation of the emulsion itself. A small addition of soluble bromide salt, Dr. Eder found favourable, if the plates were to be kept for a long time in hot countries, and this was proved by the plates made for the use of Prof. Dr. Simony in his travels in the Canary Islands.

(VI.) Solarisation, its Causes and Application.

By solarisation is meant the appearance which a plate assumes when after a long exposure it seems completely or in parts to have lost the power of being normally developed. Primarily the light-sensitive plate has the property of blackening in the developer more and more in accordance with increasing exposure. No solarisation appears with short exposures. The less sensitive a plate is the longer generally may it be exposed without solarisation appearing. In order to obtain more or less complete solarisation, a plate must be exposed some hundred to several thousand times longer than is necessary for the production of a negative.

Gelatine plates solarise much quicker than collodion dry plates with preservative, the principal cause being probably the greater light-sensitiveness of the plates. Bromo-iodide plates solarise somewhat less easily than pure bromide plates. The stronger the developer and the longer one develops, the easier the plate solarises. In manycases it depends solely on the developer whether the plate solarises or not.

If a plate has had a preliminary exposure to faint diffused light, a much shorter exposure is sufficient to cause it to solarise than if it were intact. Under certain conditions a pre-exposed plate shows distinct signs of solarisation, after ten seconds' exposure to lamp-light.

Solarisation was much dreaded by old workers because many a plate was wholly or partly ruined by it, and only latterly has any attempt been made to utilise solarisation.

If a gelatine emulsion plate is exposed under a positive to diffused daylight, the density increases only in the first one or two seconds. After an exposure of a half to three quarters of a minute a negative appears on development; in the brightest places, however, a positive is formed by solarisation. With a longer exposure the change into a positive is more complete. After from three to five minutes exposure to diffused daylight, the conversion is most complete; later the image becomes foggy and disappears. (Bennett, Haack.)

[1] Eder and Toth. *Photo. Corresp.*, 1881, p. 67.
[2] *Camera Club Journ.* Conference Number, 1890, pp. 109-114.
[3] *Photo. Mitth.*, 1882, vol. 19, p. 7.
[4] *Photo. News*, 1881, p. 533.
[5] *Photo. News*, 1882, p. 491.
[6] *Phot. Mitth.*, 1882, vol. 19, p. 16.
[7] *Brit. Journ. of Phot.*, 1882, pp. 542, 549.
[8] *Photo. Corresp.*, 1883, p. 16.
[9] *Brit. Journ.*, 1882, p. 52.
[10] *Amateur Phot.*, vol. 12, p. 361.

(*To be continued.*)

Burslem (Staffordshire Potteries).—One of the largest and most influential gatherings held in the Potteries for some time, took place on the 5th inst., when a lantern exhibition of the AMATEUR PHOTOGRAPHER Prize Slides was given. Some very fine slides were also shown by the members, including a set by the President, Mr. E. B. Wain, Messrs. H. R. Makepeace, Maddock, T. Taylor, J.P., and Graystone Bird, of Bath; the latter being frequently applauded, some of the snow scenes and studies of children being especially good.

Pictorial Photography; its Principles and Practice.

By A. H. WALL.

(*Continued from page* 382.)

CHAPTER IX.

THE RULES AND PRINCIPLES OF PICTORIAL COMPOSITION.

THOSE rules of art which accepted authorities have laid down for practical guidance are of great value to the student. They are very suggestive, they simplify practice and economise time and labour. But followed blindly, with a kind of superstitious faith in their importance, they are often misleading. They are especially mischievous when thus unquestionably accepted by the artist-photographer, working as he does under conditions and with methods unknown to those who founded such rules. His practice, although in aim one with the picture painter's, is yet so distinctly his own that it becomes a positive necessity to modify and adapt for his use rules which were originally made for disciples of a sister art.

It is, therefore, doubly necessary for the camera artist to understand not only those rules which should govern his practice, but also the principles from which they spring. Otherwise he will be too apt to be slovenly and careless, to regard these things as matters of slight importance, merely as questions of taste, instead of scientifically demonstrated reasons.

He should be able to show not only how rules are applied, but why they are applied. He should, by mastering principles, have a thorough conception of their actual and relative importance, capacities, and various applications; be able to explain how they act and re-act one upon another, how they may be blended or separated, and even when it is true wisdom to ignore them altogether.

To make this plain and clear, let us turn to one of the best known and most famous pictures in the world, Leonardo da Vinci's "Last Supper." In this any superficial observer with a knowledge of certain pictorial rules, which are amongst the oldest, simplest, and best known we have, will see how they have been altogether set aside. If, instead of beauty, variety, contrast, breadth, and harmonious relationship of parts, Leonardo had sought only ugliness, sameness, monotony, spottiness, and conflicting elements, to confuse and distract the vision of all beholders, he could hardly have adopted a more suitable process of combination. Yet the result is glorious. The picture has been so often engraved that you are sure to be familiar with it. If you recall it to your mind, you will know we have in it, first, in the most prominent position, merely a long straight table, covered with a white cloth, standing on four conspicuous tressels, all exactly alike. There is a knot to each end of the cloth, each the size and shape of the other, and at either end its decorative border appears in seven thin straight upright lines, no more, no less. It (the table) runs straight from one end of the painting to the other, and the space on its either side is the same. The ceiling has square-edged plain beams and joists in abundance, formally intersecting each other at right angles and regular distances. Four angular pieces of drapery, each of the same size and shape and equi-distant, hang straight and without a fold to break the repetition of their straight-pattern lines made up from the endless repetition of one simple ornament. At the back of the room are three angular openings, one large and two smaller ones, all precisely alike. Little loaves are arranged in a line along the top of the table, with a straight row of small drinking cups beyond them, all of one size and shape. Could you imagine anything more pedantically formal, more primitively simple? Can you conceive a composition more wanting in attractiveness or interest? It is almost like a *basso relievo*. The veriest tyro in art could point out its seeming defects, and show how the simplest and most elementary rules of composition had been violated in it by this great and glorious painter.

But suppose this monotony and this want of interest was part of Leonardo's conception, and this apparent primitive simplicity of outlines, forms, and *chiaroscuro* were all intentional; that the artist determined to concentrate in one focus a marvellously dramatic story, realising in its fullest intensity the thoughts, feelings, incidents, and characters belonging to it, and that therefore he thus subordinated every other part of the picture; that he ignored these simple elementary Rules and carried out their Principle upward to a grand development. Look at the picture again, and study it from this point of view. See the Christ, isolated by the awe and reverence of His worshipping disciples, grandly simple in pose, God-like in the calm consciousness of His approaching agony and shame. He sits with His full face fronting you, exactly in the centre of the picture—where a well-known Rule says emphatically the principal figure should never be—and the disciples, divided into halves, sit six on either side—breaking another Rule which has for centuries told us that in every group of figures so many should have their backs to the spectator. No more perfect or magnificent example of pictorial composition was ever conceived. It is a triumph of Principle. All the rules ever invented could not have helped Leonardo to anything half as perfect. Breadth of effect in treatment, and the concealment of subtlety in design; variety of idea; force of expression; contrasts of pose, action, and expression are all here. You never see those parts of the picture which were intended to be subordinated by their want of interest and unattractiveness. You see only that long straight row of human figures and faces.

But did Leonardo regard rules scornfully? By no means. Understanding principles, he made from them new rules to suit emergencies. "Elementary Principles," as Henry Howard, R.A., wrote, "which have been correctly deduced cannot be changed; but, happily, the aspects under which nature presents itself to the eye and sympathies of the painter are infinitely various, and leave different impressions on different minds. . . . The precepts and practice of those great masters, from whose standard productions our stock of theory is derived," help us to understand the principles they approved. If you want to know how Leonardo esteemed rules, there is the book he wrote to tell you, illustrated by himself, and published in his lifetime. "The young student" should, as his opening chapters assert, "study nature, in order to confirm and fix in his mind the reason of those precepts which he has learnt. He must also bestow some time in viewing the works of various old masters, to form his eye and judgment, in order that he may be able to put in practice all he has been taught. The organ of sight is one of the quickest, and takes in at a single glance an infinite variety of forms; notwithstanding which it cannot perfectly comprehend more than one at a time. For example, the reader at one look over this page immediately perceives it full of different characters; but he cannot at the same moment distinguish each letter, much less can he comprehend their meaning. He must consider it word by word and line by line, if he be desirous of forming a just notion of these characters. In like manner, if we wish to ascend to the top of an edifice we must be content to advance step by step, otherwise we shall never be able to attain it."

"I believe," wrote C. R. Leslie, R.A., "the advice every master would give to a young pupil, respecting his conduct and management of light and shadow, would be what Leonardo da Vinci has actually given, that you must oppose a light ground to the shadowed side of your figure and a dark ground to the light side. If Leonardo had lived to see the superior splendour and effect which has since been produced by exactly the contrary conduct, by joining light to light and shadow to shadow,

though without doubt he would have admired it, yet, as it ought not, so, probably, it would not, be the first rule with which he would have begun his instructions."

"Now," says Leslie, in commenting upon this, "a very little observation of nature will show us that in her combinations lights with lights and shades with shades are often united, and as often opposed," and therefore these rules should not be regarded as principles or unalterable laws of art.

Sir Joshua Reynolds was a great stickler for the observance of rules, and sometimes even went so far as to set up rules in opposition to principles.

Leslie pointed out, in his "Handbook for Young Painters," another illustration of a Rule ignored and a Principle adopted. It was a painting by Watteau in the possession of Mr. Munro, "in which," as he says, "all the ordinary rules of contrast are departed from with a result as charming and as natural as it is novel. Two pretty little girls, bearing a twin resemblance, seem, from the difference of their sizes, not to have been twins, and it was no doubt the object of the painter to show as distinctly as possible their remarkable likeness to each other. He therefore places them side by side, dressed nearly alike, in attitudes as little varied as possible, their faces seen directly in front, and with the same light and shadow. Indeed, all the usual contrasts of composition, expression, colour, and chairoscuro are disregarded, yet the picture has not in any degree that formality that so often affects to pass itself for simplicity. Here the simplicity is real, and though Watteau seems not to have thought of the art or its rules, yet so consummate an artist was he that this production is not less legitimate than any other of his works, while it is one of the most original pictures in the world." And he adds, "Watteau may possibly have been painting these little girls when members of the French Academy were excitedly proving Paul Veronese wrong in throwing a broad shadow over his 'Andromeda,'" because the hero of a piece ought, by rule, to be in full light.

Sir Joshua Reynolds, referring in the fourth of his Academy orations to this famous discussion, points out that the rule they regarded him as violating was not a law involving a principle, and Paul had good reason for its non-observance.

Constable used to say, "Never mind the dogmas of the schools, but get at the heart *as you can*," and with this bit of excellent advice I now put down my pen.

But before doing so let me correct two of three or four errors in the last chapter, whether mine or the printers' I cannot say. The year 1846 should be 1864; and between the first and second paragraph some connecting lines appear to have been accidentally omitted.

(*To be continued.*)

Woolwich Polytechnic.—A meeting was held on 4th inst., Mr. F. Machem presiding. A demonstration of the Paget lantern plates was given by Mr. S. Herbert Fry. As this lecture has been previously fully reported, it is unnecessary to repeat any of the valuable hints given. A new tripod by the Thornton-Pickard Company was on view, and found great favour with those present.

Sheffield.—A meeting was held on 5th inst., Mr. Ernest Beck in the chair, when Mr. Richard Keene, of Derby, gave his interesting and instructive lecture entitled "Six Days' Photographic Ramble over Derbyshire Hills and Dales," which was illustrated by 150 slides. Most of the pictures were taken nearly thirty-eight years ago, and although some of the old landmarks had been destroyed, and many of the old inhabitants passed away, the old halls were in almost as good preservation as ever, notably Haddon Hall. The lecturer took his audience with him over Derbyshire hills in a most lucid and enjoyable manner, which was highly appreciated.

Shropshire (Camera Club).—Special meeting on 8th inst., President (Mr. F. W. Williams) in the chair. Mr. Morgan, of the firm of Fuerst Brothers, gave an interesting demonstration with the Hauff developers, glycin, amidol, and metol. Samples of lantern plates, kindly sent by Messrs. Elliott and Son, of Barnet, were distributed to the members. During the week the three-colour carbon picture by the same firm has been on exhibition and greatly admired.

The Bristol Exhibition.

THE members of the Bristol and West of England Association held their first exhibition in 1880 and the second in 1883. It was their intention to hold it triennially, but, unfortunately, the Academy of Arts, where the present and former ones have been held, has not been available. It is, of course, unnecessary to state that in the ten years since their last exhibition was held, enormous strides have been made on all sides, and the corresponding advance was hoped for by the members in their exhibition. The standard of work has been raised, and we are accustomed to high-class exhibitions, and we have no hesitation in saying that the Bristol 1893 is fully equal to any exhibition of like character that is competitive, nor do we except even that of the parent Society of this year. Possibly this may seem exaggeration, but it is not so. There is a far higher level, we must say, than we expected to see; there is a greater absence of palpably poor work and a far greater preponderance of new men unknown comparatively, or perhaps we should say a very large and very highly gratifying exhibition of new work, and, except for the Champion Class and one or two notable examples, the work seems to have been done for the exhibition.

The Association were certainly liberal in the matter of medals, and the judges have, as will be seen from the detailed list of winners, been more liberal still, and not without reason. The Association is to be congratulated on having secured the finest rooms possible, and we only wish that some of our London exhibitions could be held in similar ones. Four large rooms are devoted to the pictures, and the exhibitors may feel confident that their work could not be shown to greater advantage. The board of judges was exceptionally strong, not only photographically but artistically, and whilst the old school was represented, so also was the later or, as it has been termed, the naturalistic.

The following is the judges' report:—

"The exhibition is so exceptionally large, and the classes, with few exceptions, so strong, and of so high an average grade of quality, that the difficulties presenting themselves could only be overcome and justice done by the awarding of extra medals as indicated below.

CLASS I.—CHAMPION.

Gold medal	W. M. Warneuke.
1st silver medal	J. B. B. Wellington.
2nd " "	F. M. Sutcliffe.
3rd " "	H. P. Mendelssohn.

CLASS II.—LARGE LANDSCAPES.

Silver medal	Bernard Lintott.
Bronze "	Rob. Frost.
" " (extra)	Rev. Precentor Mann.

CLASS III.—SMALL LANDSCAPES.

Silver medal	Henry Smith.
Bronze "	W. Norgrove.

CLASS IV.—LARGE MARINE.

Silver medal	Bernard Lintott.
Bronze "	F. M. Sutcliffe.

CLASS V.—SMALL MARINE.

Silver medal	H. W. Bennett.
" "	H. Oswald Isaac.

CLASS VI.— LARGE INSTANTANEOUS.

Silver medal	Withheld.
Bronze "	E. Hawkins.

CLASS VII.—SMALL INSTANTANEOUS.

Silver medal	Percy Lewis.
Bronze "	Withheld.

CLASS VIII.—INTERIORS.

Silver medal	H. W. Bennett.
Bronze "	Harold Baker.
" " 1st extra	S. G. Payne.
" " 2nd "	H. W. Bennett.

CLASS IX.—ARCHITECTURE.

Silver medal	Withheld.
Bronze "	W. Crofton Hemmons.

CLASS X.—SMALL PORTRAITS.

Silver medal	Harold Baker.
Bronze "	Ditto.

CLASS XI.—LARGE PORTRAITS.

Silver medal	W. M. Warneuke.
Bronze "	Fred Hollyer.

CLASS XII.—GENRE.

Silver medal	Miss E. J. Farnsworth.
Bronze "	F. M. Sutcliffe.

CLASS XIII.—ENLARGEMENTS.

Silver medal	H. Sandland.
Bronze "	W. A. Cadby.

CLASS XIV.—TRANSPARENCIES.

Silver medal E. Brightman.
Bronze „ Withheld.

CLASS XV.—STEREOSCOPIC TRANSPARENCIES.

Silver medal J. H. Spencer.
Bronze „ Withheld.

CLASS XVI.—LANTERN SLIDES.

Silver medal T. M. Brownrigg.
Bronze „ G. Hankins.

CLASS XVII.—SCIENTIFIC.

Silver medal W. I. Chadwick.
Bronze „ Withheld.

CLASS XVIII.—BOTANICAL.

Silver medal Withheld.
Bronze „ J. T. Hopwood.

CLASS XIX.—ZOOLOGICAL.

Silver medal H. Sandland.
Bronze „ Withheld.

CLASS XX.—LOCAL SURVEY.

Silver medal E. Brightman.
Bronze „ W. Crofton Hemmons.

CLASS XXI.—GENERAL.

Silver medal R. and J. Beck, Frena hand-camera.
Bronze „ 'Allendale' slide changer.
„ „ F. Hollyer, print of a silver shield.
„ „ W. F. Bromhead, for flash-light work."

The Hanging Committee have executed what is always a most difficult task most admirably, and the appearance of the rooms certainly repays them most fully for all their arduous labours; nor must Mr. F. Bligh Bond, the Hon Sec., be forgotten, who was most assiduous in giving all information and doing everything in his power to assist everyone, and who has well supported his kindly President, Mr. H. A. Hood Daniel, and the Committee in their work.

The Bristol Exhibition is well worth a special visit by any of our readers in that district, or by any one who can get there, and the only uncomfortable feeling that the Bristol and West of England Association must have is in the fact that they have now raised a standard which they will have to keep up to.

The exhibition was opened on Monday evening by the Right Rev. the Dean of Bristol, who, with the large company of ladies and gentlemen, were received by the President and the Council of the Association.

The judges, Messrs. Blanchard, Bernard Alfieri, S. P. Jackson, Payne Jennings, and A. Hood Daniel, have had no mean task in adjudicating on the pictures sent in to this exhibition, not only on account of the number, which is over a thousand, but also on account of the quality. The absence of bad work is distinctly noticeable, and it makes the task of noticing the pictures also so much the harder. We must necessarily proceed according to the catalogue.

Mr. W. England shows some of his well-known Swiss scenes, which are so noticeable for their rendering of snow and clouds. J. B. B. Wellington, in 7, "An Evening on the Thames," has one of the least pleasing of all his pictures; it is far too heavy in the shadows, to our way of thinking. Just below this are two pictures by Bernard Lintott, 8 and 9, the former of which, "On the Derwent," is an exquisite soft scene, with cattle, one of the best pictures, we venture to think, in the exhibition, and certainly the best this comparatively young worker has done, and it deservedly takes the silver medal. 12, "Iford Bridge," by T. M. Brownrigg, is also good, but the foreground is unnecessarily large, at the expense of the distance. 17, "The Home of the Water Hen," by the same worker: we have the same fault to find, and also the distance is too distinct. 18, "Bringing Home the Sheep," by W. Crofton Hemmons, is characterised by falsity of tone and double lighting, the shadows of the sheep being at right angles to the high light in the sky; No. 25, by the same worker, being also false in tone. Both are good pictures spoilt by careless printing 37, by Mr. Brightman, is also too black. Mr. Chas. Moss, in 46, "The Evening Hour," has another of his charming studies, but not quite so successful as some of his previous work we have seen. R. Frost, of Loughborough, takes a bronze medal for three exquisite winter scenes. The Rev. Procentor Mann takes an extra bronze for some characteristic and charming views, "Along the Streams of Normandy." F. H. Worsley Benison has handicapped himself by choice of an unsuitable colour; a cold bluish-black is hardly suitable for "Noontide." 62, by the same worker, is far more pleasing, and by no means so heavy. 68, "Thorsgill," by E. Yeoman, is a pleasing treatment of a simple subject not improved by some unnecessary figures. J. Oswell Bury sends a warm, pleasant harvest scene. Chas. Moss shows "Wind and Rain," one of this worker's fine little Pall Mall studies, we think. J. Kidson Taylor is also represented by some characteristic work, delicate and good in tone, of which the most pleasing is 82, "A Woodland Picture." 83, "Nearing Oxford," by C. Court Cole, is somewhat too heavy and overburdened with too much foreground. 85, "Old Bits of Rothenborg," by Rev. Precentor Mann, are a little too brilliant, and warmer tone would have been more pleasing. 88, "Sunshine, Smoke, and Seaweed," is one of Sutcliffe's charming pictures, the rendering of the title being very fine. Although skied, 92, by the Rev. H. B. Hare, is good. 95-97, by F. H. Worsley Benison, are good and distinctly in advance of his other work in this class; and 99, by E. Brightman, "Tranquility," is only marred by the somewhat too white spots in the water. 108, "Homeward Bound," by E. H. Hazell, is pleasing, and the treatment is simple and distance rendering good. There is also another frame, 107, of foreign views by Rev. Precentor Mann, which are somewhat too heavy generally, but good work. 111, "A Surrey Stream," by H. W. Bennett, is a capital little bit, though the trees on left would not be missed.

The Champion Class is, as was only to be expected, exceptionally strong—such well-known workers as Miss C. Miles, who is represented by some of her well-known portraits; J. Oswell Bury, by "On a Welsh Hill-side," which gained one of our medals some years back; R. H. Lord, with his "Work and Play" and "You Stupid Boy;" Sutcliffe's well-known but ever-pleasing "Stern Reality;" F. W. Edwards' "Henry VII.'s Chapel;" Shapoor N. Bhedwar's "Feast of Roses;" Fred Hollyer's bas-reliefs; "The Rock-beating Surf," by Worsley Benison; and Marsh's "After a Sou'-wester;" W. J. Byrne's Richmond Horse Show pictures; Warneuke's "Desdemona;" Burrows' Cornish mine pictures; Court Cole's Oxford interiors; Wellington's "Eventide," and Kemp's "My First Love." America is worthily represented by J. C. Dumont and Miss Farnsworth, the latter with "The Wounded Cupid." The gold medal in this class goes to W. M. Warneuke for "Kelp Gathering." The silver medal to J. B. B. Wellington for "A still delight steals o'er the earth," and extra silvers to F. M. Sutcliffe, "A Saturday Afternoon," and Mendelssohn for "Miss M. Watson."

Class III., devoted to small landscape, is by no means poor in quality, although the pictures are small in size. The silver medal is taken by Henry Smith for a good platinotype devoid of all blackness, "Strand on the Green." 213 is a frame of quarter-plate gems by H. Oswald Isaac; we should almost imagine hand-camera work, but exceptionally fine both in technique and composition. 216 is entitled "The Coming Storm," but it certainly does not carry out the title. Bernard Lintott is represented again in this class by three charming little views on the Lakes (217); and Chas. Moss has an atmospheric effect in 219. "The Last Glimmer of Daylight" (220), by Bernard Lintott, is bold, but too harsh to be pleasing. J. M. C. Grove is represented by some of the same class of pictures as he showed at Pall Mall and the Salon. N. D. F. Pearce has some pleasing little work, though we rather take exception to the straight line mists in 230; these may be true, but it is a little unusual. Walter Norgrove takes the bronze medal for a charming series of pictures (238-246); they are all half-plate work, but good in technique and art. 259: these are four local views by T. Butler, which are only spoilt by a little too much foreground in each case.

A. W. Gottlieb has several fine little studies, 268 pleasing us most; and J. G. Darling has a very bold effect which seems to us to be characterised by cross lighting.

Class V., devoted to small marine views, contains some good work too. H. Oswald Isaac scores again with a fine frame of quarter-plate marine shots, and ties with H. W. Bennett for some of his characteristic sea bits. 285, by Crofton Hemmons, is a very fine picture spoilt by the unpleasantly hot tone. 288, by E. Evelyn Barron, is another frame of good work handicapped by one or two being a little too black and heavy. W. Thomas is also represented in this class by some of his now well-known shots.

(To be continued.)

Lewes.—Lantern night, with vocal and instrumental music. The members and friends to the number of about 200 spent a most enjoyable evening on 5th inst. The "Photography" prize slides were shown and greatly admired.

Denton.—On 5th Mr. J. Horrocks, Vice-President, in the chair the first monthly meeting was held, when the rules as proposed by the committee were unanimously adopted. Afterwards Mr. S. T. Amsworth gave a very interesting demonstration on "Developing." He strongly recommended pyro with ammonia as accelerator for developing, as he had found that it allowed greater control over developing than any of the newer developers, besides giving negatives richer in printing qualities.

Splashes of Ink.

By Penfeather.

That photography is a subject of great popular interest is amply demonstrated by the frequent references that are made in the ordinary newspaper press to real or supposed discoveries relating thereto, and to applications of photographic processes to new uses. One of the London daily papers - the *Morning*—even devotes about half a column, once a week, to the discnssion of purely photographic matter. It is curious, therefore, that so little notice has been taken of the Lippmann-Lumiere photographs in colour. From time to time we have had announcements of the most striking kind that the great photographic problem has been solved, only to find that the supposed photographs in natural colonrs were merely photographic prints coloured by hand or by mechanical means. We are, perhaps, no nearer photographs in natural colours, using the term in its true sense; but the Lumiere photographs which were recently shown at the rooms of the Society of Arts were produced entirely by a photographic process, and were representations of scenes in nature with the colours of nature reproduced with vivid brightness and with a considerable degree of truthfulness; so that a golden opportunity has been afforded the paragraphists for making copy of a very effective kind, which they appear to have neglected.

The photographic public seem to have taken less interest in these photographs than might be expected, especially considering that the means by which they were produced have not been kept secret, but have been published, and it is therefore open to any one to experiment in the same direction. The process as described does not appear to present any great difficulties to be overcome, although, from the fact that so few specimens have been made, it may reasonably be presumed that there is some uncertainty in producing the desired result. The plate is a gelatino-bromide emulsion one, the emulsion differing from that nsed for ordinary negative plates in the proportion of gelatine used, which is greater than usual, and inasmuch as every precaution is taken to obtain the silver bromide in the finest possible state of division. In order to ensure this fine state of division, cooking the emulsion is avoided, and it is not washed in bulk in the ordinary way, but each plate is washed after coating, first in alcohol and then in running water. To obtain an extremely thin coating of emulsion on the plate, after coating it is subjected to the whirling process, which photo-zinco workers employ for the same purpose. The emulsion is rendered colour-sensitive by the addition of cyanine, erythrosine, or any suitable colour sensitiser, and in order to increase the sensitiveness of the plates, which from the process of manufacture are necessarily slow, before use, they are dipped in a dilute solution of silver nitrate, acidified with acetic acid. The film, it may be gathered from the mode of preparation of the plate, is an extremely thin one, hardly appearing more than an opalescense on the glass.

It will be seen that the manufacture of the plate presents no striking feature of novelty. It is in the method of using it where the departnre from ordinary practice occurs. A colour screen is employed in the camera, and the exposnre is made with the film in contact with metallic mercury; the simplest arrangement being to form a trough having the plate, film inwards, for one of its sides, the rays from the lens being projected through the glass of the plate. The developer used is pyro-ammonia. In practice it will probably be found that considerable difficulty will be found in obtaining mercury sufficiently pure and perfectly dry, for it is obvious that with a trace of moisture present there would be a decomposition of the free silver nitrate present in the film.

The theory of the process, briefly, is that the rays of light which pass throngh the film are reflected back from the mercury, and, on their return passage, meet the direct rays, thus producing the phenomenon known as "interference" within the film, the colours reflected from the resulting plate being due to the number of strata produced in the film on developme nt according to the wave length of the ray impinging upon it. This is a somewhat abstruse theory to follow, but at any rate the results produced by M. Lumiere are very beantiful. It is trne that the colours are interference and not pigment colours, but the same objection might be taken to the delicate hues of the pearl.

The North Middlesex Photographic Society had a lively discussion, at their last meeting, on clouds in landscape, and, amongst the speakers, the ground seems to have been pretty well covered. There was, however, one not unimportant point which does not appear to have been touched upon—the printing-in of clouds taken with a lens of dissimilar focus from that with which the landscape was taken. This is a not uncommon practice, and one that may sometimes escape detection, but, nevertheless, it is a practice that no one who values truth should be guilty of. The laws of perspective apply equally to clouds as to things terrestrial, and a moment's consideration will show that these laws must be violated by such a proceeding. The clouds near the zenith differ, not only in form, but in lighting, from those nearer the horizon, and if some painters play tricks with lighting and perspective, it is no reason why photographers should follow their bad example.

Ilford Matt P.O.P.

MR. HOWSON'S DEMONSTRATION AT THE CENTRAL PHOTOGRAPHIC CLUB.

At the Central Club on 15th inst., there was a big crowd to witness the above, and Mr. F. W. Edwards was voted to the chair.

Mr. Howson said—Whilst I freely recognise that for many purposes and many tastes the glossy surface given by the ordinary Ilford P.O.P. gives results that cannot be surpassed, I have felt that there were still further fields to be conquered in the realm of photographic printing. I set myself to master the great problem of how to combine the artistic with the practical, the beauty of a matt surface with the truth and gradation only found hitherto in the enamelled surfaces.

Such has been the aim of many workers before me, and many are the attempts that have been made, but I make bold to say that nothing but failures, failures of the most pronounced kind, have been the result. I have had plain salted papers, but their only claim to notice has been the absence of gloss. Such papers are useless in these days when sensitised papers must have keeping qualities They could not be used unless prepared freshly week by week. Worse, however, is the defect arising from the burying of the image in the fibres of the paper. Prints lacked utterly all truth of gradation, and shadows were masses of darkness unrelieved by any detail.

Then I have had *so-called* matt emulsion papers which had the same fatal failing of clogged shadows, and had not, in fact, a real matt surface at all; being made by simply making the emulsion thinner than usual, they were neither glossy nor matt, and combined the disadvantages of both without a single redeeming feature.

So much for past history, and now with pride I point to the Ilford matt P.O.P. as a perfect and complete solution of the hitherto unsolved problem. Nothing of its kind has ever been made before, and the future offers nothing that can equal it. Its qualities are beyond rivalry, and leave nothing to be hoped for or desired.

Whatever we have done at Ilford in the past to advance photography (and we may fairly claim to have been a factor in such progress) is dwarfed into nothing, compared with the possibilities arising out of Ilford matt P.O.P. I do not speak in vain vapourings, or without good grounds for my self-gratification. Here is what Messrs. G. W. Wilson and Co., of Aberdeen, say about the paper:

"We believe the paper will have a most beneficial effect on photography generally. It gives a perfect matt surface when mounted in the ordinary way, without special precautions, and is eminently satisfactory. We congratulate you on the success that has attended your efforts."

Messrs. Valentine and Sons, of Dundee, say:—"Prints on the matt P.O.P. are finer, in our way of thinking, than anything ever attempted in photography."

Messrs. Werner and Sons, of Dublin, write:—"We trust that the introduction of this paper, which is a further step to the refinement of photography, will meet with the success it so fully deserves."

Mr. Adam Diston says:—"If I were asked to state its special qualities, I would say that it is a paper which gives the best possible results with the least possible amount of trouble."

Mr. W. Crooke, of Edinburgh, adds his testimony as follows:—"I now enclose a print on it, which is much finer in quality than a print by any other process could be."

I have dozens of other letters all in the same strain, and I have limited my quotations to the first half-dozen opinions received, so as not to weary you with repetition, and I will add only one more opinion, viz., that of the editor of *Photography*, who thus concludes his notice of the paper: "This paper marks a departure in photographic printing, and we hardly know which to congratulate most, the big family of photographic workers, for the increased power put into their hands, or the company to whom the world is indebted for this vehicle of expression."

I will not lay too much emphasis on individual opinions, even though they are from some of the best workers of the day, but leave you to judge for yourselves from examples how far my views are justified by results.

Not alone in point of surface, but equally in tone, is there a great advance artistically. The deadness of the surface refines the colours, and makes them more in accordance with the canons of art, and the tastes of those who hope great things for the future of

photography. From warm browns and sepias to blacks of a soft velvety richness, not too cold or glaring, but restful to the eye, is the gamut of colour within our reach, and withal a perfection of gradation never before touched, an absolute freedom from double tones, and a delightful ease of manipulation which one attempt with the paper will prove beyond doubt.

This brings me to the practical advantages of the paper apart from its artistic merits. I have spoken of truth of gradation, and possibilities of colour, which may be said to be both artistic and practical merits, and when I add that these results may be obtained without any special precautions, or any alteration of manipulation, either in printing, toning, or mounting, I surely have said enough to justify the highest pralse that could be accorded to the paper.

Prints on Ilford matt P.O.P. are printed in the usual way, toned (side by side with the ordinary P.O.P. if you like) in the Ilford sulphocyanide bath, and mounted with starch paste just in the regular way. From printing to finishing you may work the paper side by side, ignoring absolutely the fact that they differ in any way, and when mounted you have the two kinds of prints, which are as different as possibly could be, without one iota of extra care or trouble. Indeed, until they are mounted and dried, you are hardly aware that the two papers differ in the slightest degree.

Now, I ask you, was anything equal to this ever attempted, or ever dreamt of, up to the present, let alone accomplished?

There are two well-defined and great advantages accruing to the professional photographer in connection with this paper. First, if he wants, as is most probable, prints on both matt and glossy paper from the same negatives for a sitter, he can produce them without a single moment's extra trouble, no necessity for another class of paper, or another set of manipulations, and from the same negative similar results will be obtained. It is quite unnecessary to take into consideration that for a glossy print you must have a negative of such and such quality, and for matt prints one of quite a different class. Ilford matt P.O.P. yields good results from a wider range of negatives than any paper I have ever tried; be the negative hard or soft, prints from it will compare more than favourably with any other papers.

Secondly—There is, and has been, a cry from the professional photographer: Let us have something new to offer to our sitters—something to attract attention and compel new business. Such a want is fully answered by matt P. O. P. Prints on it can be produced, as I have shown, so easily, and what is of more importance, of such quality, that few sitters will object to pay a considerably enhanced price for such work—a price which, in view of the absence of extra labour, and but a small increase in cost of paper, must yield a more than proportionate return to the photographer. I speak here to the profession, and urge you not to throw away an opportunity so plainly put before you. Do not fail to show your sitters such prints, and do not, above all, I beg—do not rush in and cut prices in the race for business. If an improved style of portrait is worth more to the public, as this is, it is also worth more to you, and deserves and will yield better business if you will let it.

Of the actual manipulations and points to be noted therein, there is little to be said. Matt P. O. P. prints much like its predecessor, loses but little in toning, etc. The progress of toning is judged in exactly the same way, and it need only be borne in mind that prints dry a little colder in colour than they appear when looked through whilst wet; and also a little darker in image when looked at on the surface.

Warm tones are best obtained by a bath diluted with its own bulk of water, and rich blacks by a bath with double gold, whilst sepias are to be had by toning for a short time in a bath rich in gold. I would mention once again, though it ought to be unnecessary, that good blacks are unattainable, except with a negative full of vigour and well graduated. A poor negative will never yield such a print by any process or any scheming. Mounting matt P.O.P. prints is one of the easiest possible processes. Well-boiled and strained starch paste is the best mountant, and is best applied to the print whilst it is wet, the print is placed on the mount, and rubbed down with a damp sponge or a piece of oil paper, such as is used with a letter copying press. If any mountant gets on the face of the print a damp sponge, carefully applied, will remove it. With only ordinary care nothing further need be done to the print, for matt P.O.P. mounts with more ease than does the glossy, but, if required, matt prints, when mounted, may be lightly cold rolled, but must not have either heavy pressure or heat. Spotting is done with the usual colours mixed with water only, and from the very nature of the surface is much less likely to show than with other styles of printing.

For the rest, all the many hints given from time to time *re* P.O.P. apply with equal force to both papers, and therefore they need not be referred to except so far as I shall toubh on them in the practical demonstration to follow.

Finally let me say a word or two of a personal bearing. It has been said that a man who makes two blades of grass grow where only one flourished before deserves well of his country. Adapting this saying to ourselves, we may claim to have added something to the well-being of the British nation; for we have not only planted the original blade (P.O.P.), but have now added the second (matt P.O.P.), and have in so doing brought to England a volume of trade, which hitherto has been, for the most part, in the hands of our Continental friends. To have done this in the present day, when the cry is "English supremacy in trade is decaying," is no mean accomplishment, and we feel some pride in being the means whereby such a result has been achieved.

Mr. Howson proceeded to pass a series of prints, which had been handed unexpectedly to him by the chairman, and some which he had brought down, through the various stages. The prints were first well washed to get rid of the free nitrate of silver, then treated to an alum bath. This, Mr. Howson said, was safer, did not take up much more time, and was an advantage in producing more regular toning. The strength of the alum was immaterial, though undissolved alum should be avoided. The precaution as to avoidance of any contamination with hypo in the preliminary treatment and toning was also accentuated. The toning bath was the sulphocyanide as used for the glossy P.O.P., and toning was carried till the tone on the surface of the print in the toning bath was that desired in the finished print. The colour goes slightly in the fixing bath, but dries darker and colder. Red-brown tones were obtained by short toning in weak gold, as in a bath diluted or one once used. Sepia tones by short toning in a bath rich in gold. Black tones were only to be obtained by vigorous negatives, and a strong, rich in gold bath, but more depended on the negative than the bath. If the prints were over-printed they could be slightly reduced by long fixing, which seemed to carry the toning further, which must therefore be allowed for.

Mounting was exceptionally simple and easy, and good freshly-made starch paste was the best, and should be applied to the back of the print and the print rubbed down into contact by placing a piece of oiled paper over the same. Any surplus mountant which got on the surface of print could be removed by a damp sponge. The prints could also be cold-rolled if too great pressure was not used.

We hope within the next few weeks to give a detailed account of our trials with the paper, which gives beautiful results, a set of the winning pictures at Bristol being on this paper, and causing considerable comment.

Brixton and Clapham.—On 5th inst., open lantern evening, Dr. J. Reynolds, F.R.G.S., in the chair. Several slides by members were passed through the lantern, after which a set of slides, contributed by the Southsea A.P.S. for circulation by the P.S.G.B, were exhibited. The evening was a very enjoyable one, and the members and their friends went home very satisfied with the entertainment which had been provided for them.

Blackheath.—On 22nd ult. Mr. E. Hawkins gave a demonstration on "Flash-light Photography." The demonstrator described several kinds of lamps for producing flashes with magnesium powder, and also two methods that he was in the habit of using himself, one being as follows:—In the centre of a flat piece of tin about 12 in. square a thick patch of Schultz's powder about 4 or 5 in. diameter is spread; the powdered magnesium is then sprinkled over the heap of powder, and the mixture is fired by means of a match or taper; the brilliancy of the light, of course, depends on the quantity of magnesium used. The other method is rather more elaborate. A number of clay tobacco pipes are connected by short pieces of rubber-tubing to a row of nozzles in the side of a piece of metal pipe from 18 in. to 2 ft. in length, which is again connected by rubber-tubing to a pair of bellows. Asbestos fibre is bound with wire round the bowl of each pipe, so as to stand up about two inches all round the bowl, after the style of the feathers in a shuttlecock. The whole arrangement is fixed lengthways on a flat horizontal board, with grooves to carry a vertical reflector at the back, and a screen to diffuse the light in front, this screen consisting of a piece of plain glass rubbed over with soap. The board carrying the row of pipes is held upside down, and the fibre surrounding each bowl dipped into a cup containing methylated spirit. After this a charge of magnesium is put into the bowl of each pipe, and the whole apparatus, with screen and reflector put up in position; the spirit being lighted, a smart pressure on the bellows drives the magnesium up through the flames, and a powerful flash is produced. Mr. Hawkins advised the use of white paper reflectors on the walls and floor to soften the shadows, and he liked to place the light rather higher than, and a little way behind, the camera. A group of the members present was taken by means of this apparatus, a Paget xxxxx. plate being used; and a bromide print was afterwards made from the negative, giving a very successful result.

Remarks on Hand-Camera Work and Hand Cameras.*

By J. K. Tulloch, M.B.

I confess to having been for a long time a very great sceptic as to the possibility of doing even decent photography with a camera held in the hand. The excellent slides shown at some of our meetings from negatives said to have been done in hand-cameras almost persuaded me that the thing could be done, however, and I immediately set about a mild kind of inquiry into two or three points which speeially interested me.

Whether it be from use or wont, habit, prejudice, or what you like, I am a "stickler" for definition. I go in chiefly for lantern-slide work, and, however tolerable a 14 × 12 fuzzytype (as they have been jocularly called) may be, want of definition in a little picture three and a quarter inches square has always been singularly abhorrent to me.

For this reason it was a long time till I could bring myself to believe that a hand-camera negative need not necessarily be blunt. I have proved to my satisfaction now that a *high* degree of sharpness is attainable in a hand-camera negative. A good deal of the work done by the hand-camera is not sharp, but it need not have this defect, and this was the first question I determined to test, "To what extent must one be prepared to sacrifice definition in taking to a hand-camera?"

Andrew Pringle, in his classification of amateurs, has a class of *mechanical* amateurs. It seems that their hobby finds expression in the designing and making of hand-cameras. I plead guilty to being of this class, and furthermore plead guilty to having made no fewer than four hand-cameras this season. When I say I have made four hand-cameras, I mean this in a certain restricted sense. For certain reasons which may appear later on, I soon decided in favour of dark slides as against a magazine arrangement, and it is to be understood that in my home-made hand-cameras I did not make the dark slides. But, to begin at the beginning, when I first decided to take up hand-camera work, I sought to make a camera having the following conditions or qualifications. First, it must be small, light, and portable, strong, weather-proof, capable of carrying eight to twelve plates, easily changed. The shutter must be not over-fast, and not liable to get out of order. Lastly, but most important of all, it must be well within my power of construction.

I first of all sent to Mr. Wray, of London, for a single stereoscopic lens of five inches focus. I decided upon a single lens for the following reasons. First, as I only wanted the lens to cover a lantern plate, a single lens of five inches focus is practically rectilinear even under trying conditions upon this size of plate. Secondly, a single lens gives a crisper and more brilliant image. Thirdly, this stereoscopic lens by Wray, working as it does magnificently at an aperture ratio of eleven, was abundantly fast for all ordinary purposes; and, lastly, a single lens even by a good maker is comparatively cheap, this lens by Wray, for instance, costing but twenty-five shillings.

To have gone in for a rectilinear I would have had the advantage only of working with a larger aperture, and this with the disadvantage of giving me less depth of focus, or requiring me to arrange some focussing arrangement on my camera before I could have taken advantage of the large aperture for near and far objects. By contenting myself with an aperture of *f*/11, I secured such depth of focus as to render any focussing arrangement on the camera unnecessary—a huge point, I think. A single lens has other points of advantage which I need not advert to, such as the ease with which a shutter can be fitted on it, and so on.

The lens having been duly received, I set about the construction of camera No. 1 as follows:—A well-made pine plate-box with grooves for twenty-four plates was procured. This box was divided into two chambers or divisions by a thin partition of wood. The front half was the camera proper, the back half the magazine. The lens was placed on the end of the box, having upon it a shutter, which I need not describe, as it did not turn out satisfactorily. The hinges and hasp were blackened with chloride of copper, and the whole box covered with morocco leather. It had quite a respectable appearance. Although there had been no attempt made to disguise the true nature of the machine, if one carried it under the arm (and it was small enough for this), with the lens looking to behind you, not in front, people passed by, like the Levite of old, and took no notice.

The plates were changed in a simple and certain way. I had a small bag made of two thicknesses of black twill. The mouth of the bag was opened, the camera dropped in, and the bag tightened by means of a running string round the wrist. This done, the catch of the lid was turned, the lid opened, and the plate taken from the back half of the camera (where were a dozen plates in the grooves) and slipped down in front of the partition, where it was ready for exposure. I used this camera some half dozen times, but soon found that it had two faults.

In the first place, while the plates were most easily and rapidly changed, the manœuvre was conspicuous and objectionable in streets and crowded places, where one would most naturally use a hand-camera.

In the second place, the movement of the hand and arm to release the shutter caused the camera to move, and my pictures were blurred. At first I thought I had not set my lens to focus. I tested this by setting my camera on a stand, and exposing with a cap. The picture was sharp. I then thought the shutter vibrated the camera. I tested this by holding the camera myself and getting a friend to release the shutter, The picture was sharp. I therefore concluded that it was the movement of the hand and arm in the act of releasing the shutter that did the mischief. I may remark here that I am convinced that many of the blurred pictures got from hand-cameras are brought about, not by vibration of the shutter, not by unsteadiness in holding in a general way, but from this special movement made unconsciously in the act of releasing the shutter. Later on I will describe some trials I made to determine how prolonged the exposure might be without blurring, this movement being eliminated.

Seeing that the mode of the changing of the plates was unsuitable, and the shutter difficult to release without movement, I determined to make another camera. I cannot show you this first camera, for the simple reason that I have used certain parts of it as material in the subsequent cameras. In thinking over the question of an easy release for a shutter, I remembered that I had a simple drop shutter, which was all that could be desired in this respect. I hunted it out. A simple unaccelerated drop shutter gives about the speed I like. It is not prone to stick or get out of order, but it is cumbrous; over and above this, it adds considerably to its size to have it on the camera in a set state. Still the drop shutter had so much to recommend it that I determined to adopt it and bring all other conditions to suit it. As I had no means of keeping the light from entering the camera while setting the shutter, I abandoned the idea of any magazine arrangement, and decided to have dark slides. Having little experience of magazine cameras, I can give no opinion upon them. All that I can say is, that the dark slides have given me unbounded satisfaction. You can carry one in this pocket, one in that, so that you never feel them about you. You can fill Nos. 1 and 2 with quick plates, and Nos, 3 and 4 with slow, and expose them how you like. You can slip down to the harbour with only a single plate or with eight, just as you like, and the changing is simple and rapid. I am a great believer in the dark slide system. As dark slides are not child's play to make, I ordered four from Mr. Birnie, and meantime set about devising camera No. 2.

I thought myself almost to distraction as to how I could contrive to design a box with a drop shutter on the end of it to look tidy and unconspicuous. While busy over this question, I remembered that camera No. 1 had not proved weather-proof; indeed, I was convinced that it was not possible to make a hand-camera weather-proof, and, if this were to be remedied by having a water-tight case of any kind for the camera to be carried in, seeing that the camera would be only exposed for a moment during the exposure of the plate, I might as well have the camera any handy shape I liked, independent of appearance altogether. This simplified matters hugely. I designed a simple box, of proper dimensions at the back to take the slides, but getting narrower towards the front, to allow my hand to lie naturally to the release of the shutter. The body of the camera I made of stout millboard, attached with brass screws to a mahogany front for the lens, and a mahogany frame behind for the dark slides to work in. The whole was covered with stout morocco leather, and, as you will see, is quite presentable. I thought I would require no finder, but placed a circular spirit level on the top. This camera I thought, at first, a great success. I got my saddler to make me a nice leather case to hold it and the dark slides, and thought I had come to my journey's end.

The first fault that I had to find with it was this: I had placed the lens centrally to the plate, and this gave me my horizontal line too high, I had too much foreground by far. I see from time to time writers in the journals crying out for a rising front for the hand-camera; I have no desire for any such addition. Let the lens be so fixed as to give, with a level view, a horizontal line about one-third up the plate, and the cases must be few indeed requiring further elevation. This was the first fault; that I remedied by altering the position of the lens. Now, some one may be inclined to say, "If you had had a view-finder you could have had the horizontal line just where you liked by tilting your camera." True, but in that case my architecture would have been, so to speak, "to the dogs" without a swing-back, and who has time to stand in a crowded street arranging a swing-back? No, I found, after the alteration of the lens, the camera was all that could be desired, as far as performance was concerned.

What, then, was fault No. 2? It was this. I said that I had got my saddler to make me a case. Now, a saddler makes a solid and

* Read before the Dundee and East of Scotland Photographic Association.

substantial job, not, however, erring on the light side. Again, a case to hold a quarter-plate camera, which does not fold down, together with four double dark slides, must needs be of considerable bulk, and this was fault No. 2—the camera and slides made a too heavy and bulky parcel. If you slung the thing over your shoulder, it was big enough to be conspicuous; if you carried it in your hand, where were you to dispose of the case while you made an exposure? It was weather-proof, and fulfilled every other condition, but it was too bulky. Of the few dozens of plates which I exposed in this camera, not one showed the slightest blurring, but, on the contrary, seemed, to the naked eye at least, to be as sharp as any stand camera picture. Once or twice I carried the camera out without the case (it has a leather handle for the purpose), stowing the slides in my pockets, but I found that the brass mounting of the lens, the spirit level on the top, etc, attracted too much attention. It is, however, the most reliable hand-camera I have, as far as performance goes.

(*To be continued.*)

Birmingham.—On 5th inst., Mr. J. T. Mousley in the chair. Mr. Fry, representing the Paget Prize Plate Company, demonstrated the development of proofs on printing out paper which have only received a part of the normal exposure, with very satisfactory results from prints only about one-tenth exposed. A number of specimens of print-out opals and lantern slides were also shown and very much admired.

Herefordshire.—On 5th inst. a technical meeting was held, Mr. Thos. Smith, A.C.A. (city chamberlain), being in the chair. The Vice-President, Mr. Alfred Watkins, gave a lecture on "Bees, and Bee Culture." In opening his address the lecturer explained that he purposed treating his subject entirely from a photographic aspect, and that his object was to show how to prepare a lantern lecture on a scientific subject. Mr. Alfred Watkins, whose constant zeal, and observation, and labours in the apiary have become so widely known in the scientific world, then passed through the lantern his very fine collection of slides on "Bees and Bee Keeping," part of which were recently shown at the P.S.G.B. These slides illustrate every phase of the life of a bee, from the egg through all the changes until it becomes a perfect insect; the anatomy of the bee, and the function of the different organs; the old system of bee keeping in foreign countries; the most improved modern apiaries, and the scientific management of the same. The lecturer then explained to the members his methods of preparing the subjects for lantern slides micro-photography, etc., etc., also exhibited several special device and contrivances he had made for the purpose.

West London.—On 14th ult. Mr. J. C. Dollman delivered an address on "Figure in Landscape." After stating that the disposition of figures in a picture is mainly a matter of feeling begotten of the occasion, Mr. Dollman proceeded to deal with the title subject under the three headings, "Why?" "Where?" and "How?" *Why* have a figure at all? The landscape may possess a charm apart from "human interest." If figures be admitted into the picture they should be of secondary interest, subordinate to the principal idea. The figure may assist in intensifying the meaning of the subject, as a man struggling before the storm conveys the idea of wind, or a figure or group may give balance or point to the subject. Turner is the source of the highest instruction on this point. *Where?*—Genius is often an instructive guide. In photography the relative value of the figure is sometimes miscalculated, and the focussing screen giving the image upside down seriously handicaps the photographer. A suggestion put forward by the lecturer was that the landscape should be photographed first and a print taken. The print could then be examined at leisure, and the question of where the figure should come thought out. Subsequently the scene could be rephotographed with the figure in the position decided upon. Though troublesome, this plan should prove efficient, and it would give photographers the opportunity of showing what art they possess. The best place for figures is in the space between the middistance and the near foreground of the landscape, though a figure quite in the distance may be the making of a picture if judiciously introduced. *How?* In posing your models do not overdo it. Learn the value of restrained power, simplicity, and suggestion. *Never do it all.* Leave something for the spectator to do. Provoke enquiry, curiosity, fascination, *and* gratify it. Avoid the commonplace. Seek for simple, unaffected occupation for your figures. Figures in motion should have more space before than behind them. Study variety in posing your models. Rather let the models pose themselves at your instruction, and seek for grace in disposing them. If the pose is *easy* it will be graceful. Shun the conventional. A sympathetic model is alone the kind to employ. The lecturer concluded with some humorous references to the conventional costume of the day, with especial reference to men's clothing and the absurd persistency of the top hat.

The Recent Solar Eclipse.

By Captain E. H. Hills, R.E.

(*Continued from p.* 400.)

We must now leave the more general questions and confine ourselves to our special subject, namely, the eclipse of April last.

Of the four instruments employed by the British observers, three were arranged for photographic methods and one for visual work—this was the photometer.

The first instrument I take is the photo-heliograph or coronagraph, for taking the direct photographs of the corona, of which identical instruments were stationed in Africa and Brazil—it being one of the special points of this last eclipse to compare the appearance of the corona as seen in Brazil and Africa and to determine if there occurred any change in the hour and a half interval of time which separated the phenomenon as seen at the two stations.

The coronagraph consists of two long-focus cameras, mounted side by side on one equatorial mounting; one was provided with an achromatic lens of 4 in. diameter and 5 ft. focus, giving an image of the sun a little under $\frac{1}{2}$ in. in diameter, and the other was provided with a Dallmeyer 4 in. photo-heliograph lens mounted in combination with a $2\frac{1}{2}$ in. Dallmeyer negative lens of 8 in. negative focus, giving an image of the sun $1\frac{1}{2}$ in. diameter.

I may say at once that the results obtained by the Dallmeyer lens were distinctly superior to those of the single lens.

I will now show slides of three coronas that have been successfully observed by the same instrument. You will understand that these are drawings, not direct photographs, as it is impossible to get all the details from the brightest portion near the limb to the faint outer streamers impressed upon the plate with the same exposure.

I have now some slides prepared from the drawings made by earlier observers, and you see how very different they are. It would seem that this beautiful phenomenon causes even the most experienced observers to lose their heads completely and renders absolutely valueless their visual impressions. It is not too much to say that but for photography we should not be in possession of a single reliable corona picture.

The next instrument we employed was the prismatic camera—sometimes also called the slitless spectroscope or the objective prism. This consists essentially of a large prism of small dispersion placed outside the object glass of a photographic telescope.

When directed on the eclipsed sun, this instrument gives a series of rings corresponding to the different bright lines in the spectrum of the prominences. If there happened to be a very bright line in the spectrum of the corona, a corresponding ring will also be seen. This is so in the case of the 1474, or "green" line; but none of the other corona lines are strong enough to thus show themselves.

The great advantage of this instrument lies in the fact that it admits the largest possible amount of light to the plate and consequently instantaneous exposure can be used. It is an advantage to use orthochromatic plates for getting out the green line and the regions near it.

One of the special points to be investigated by this instrument was the spectrum of the regions close to the body of the sun; for this purpose several instantaneous exposures in quick succession were to be made just after the beginning of totality and just before the end. By this means it was hoped that a large number of bright metallic lines would be disclosed. This expectation was partially realised; but for the full results we must wait for the publication of them by the Royal Society, at whose expense, conjointly with the Royal Astronomical Society, the expedition was sent out, and whose property therefore the results are.

The other instrument we used was the slit spectroscope. In this case two complete instruments were mounted on one equatorial mounting; they were of different dispersive power—one having two flint prisms and the other one. They were each provided with a condensing lens to throw an image of the sun on the slit. The position of this image was arranged so that the slit cut right across it, and therefore the resulting photographs show three distinct spectra. First, the portion over the dark body of the moon. This shows a few spectrum lines which are due to atmospheric haze and are of no importance. On either side of this comes the part where the slit cuts through the prominence region. There may happen to be a prominence at this point, in which case we shall get its spectrum in the form of a series of small dots in the photograph. This eclipse took place nearly at a time of sun-spot maximum, and therefore prominences were plentiful. This is well shown by the fact that the narrow slit fell across a prominence in three cases out of a possible four. Outside this region again we get the true spectrum of the corona, to obtain which this instrument was specially designed.

The lines are very faint and can be seen only by means of a

microscope; but it is by these faint lines that we gain real information about this phenomenon.

The photographs show in a marked manner the shift towards the red end of the spectrum of the point of maximum actinic effect of the corona light as compared with sunlight, proving that the corona cannot be due in any great measure to sunlight reflected from small particles.

The disadvantage of this class of instrument is the small amount of light that can be admitted into it. The slit cannot conveniently be more than 1-500 in. in width unless the collimator is of long focus, which is inconvenient when it is to be mounted equatorially. If we used a siderostat we could then have the collimator and camera lens of any focus we liked, which would be a very great advantage.

Now a few words as to the more purely photographic questions involved.

The temperature at Fundium varied from nearly 100 deg. F. at midday to about 70 deg. F. in the early morning. We constructed a dark-room in one of the observing huts; but owing to the very great heat inside, reaching sometimes over 120 deg. F., we never used it except for filling slides, and we did all our developing at night on board the gun-boat.

We had no ice. A large piece which we were able to procure about a week before the event, in spite of every care, relentlessly melted away and had totally disappeared on the day before the eclipse.

However, we had no difficulty at all from this cause, and I think I may say that of all the plates we exposed, not one showed a sign of frilling. All the eclipse plates were developed and fixed before we left Fundium, except some of the prismatic camera plates, which were brought home undeveloped. As to the policy of this course opinions are much divided; but experience gained at previous eclipses seems to show that it is better to develop at once, and this certainly has the advantage of relieving the observers from much anxiety of mind.

We exposed a number of trial plates during the week before the eclipse, and thus would have been certain to find out if any special precautions were necessary. We used plates of various makes, and did not notice anything different in their behaviour to that found under ordinary conditions.

One mistake we made was using too rapid plates; the so-called "special extra rapid," or whatever other title their makers designate them by, have usually very slight advantage in the point of speed over ordinary makes, whereas the resulting negatives are nearly always inferior. Some orthochromatic plates were used with a prismatic camera, and they would possibly have been advantageous for the slit spectroscope, for the corona photographs they present little or no advantage.

As regards developers, I have nothing special to record: we used the ordinary kinds, pyro-soda, eikogen, and amidol, and noticed no peculiarities of behaviour.

As an instance of the unexpected dangers to which negatives are liable, I may mention that some of our plates, fortunately not valuable ones, were nearly destroyed by cockroaches, who seemed to find the gelatine film a more appetising fare than ship's biscuits.

In conclusion, let me show you some slides representing the eclipse camp and instruments at Fundium, together with some views of the surrounding country. The originals of these were taken by Professor Thorpe and Serjeant Kearney, and it is to Professor Thorpe's kindness that I owe these slides (slides).

South London.—On 4th inst., ordinary meeting, Mr. Maurice Howell, Vice-President, in the chair. The evening was devoted to a demonstration (by request) of "Platinotype Printing," by Mr. F. W. Edwards, the President of the Society. In working platinotype it is necessary to avoid dampness during printing, as it causes flatness and degradation of the prints. During cold weather he considered it advisable to use the developer slightly warm. Cold solutions increased contrast, while a warmer developer brought out more detail. A properly exposed print could be left in the developer for any length of time without any fear of over-development. The presence of air bubbles at first did not matter; wet the spots, and they develop up like the rest of the picture. Large prints can be developed, a portion at the time, by drawing them through the solution again and again. It is necessary not to touch the prints before development with fingers which have become contaminated with acid from the fixing bath. Under-exposed prints may sometimes be saved by developing in a hot bath. The paper takes less time to print than albumenised paper. During printing it must be shielded from damp by backing it up with rubber pads. Any one starting the process Mr. Edwards recommended the use of one negative until good results were obtained. Between forty and fifty prints were developed, fixed, and washed during the meeting

Photography as an Educational Agent.

By W. A. Watts, M.A.

The Art-Science of Photography, being almost entirely the produce of the last fifty years or so, has not, it appears to us, by any means had its value as an educational agent fully recognised; in fact, it has barely, as yet, laid claim to a position amongst the branches of education at all. True, the Optical Lantern is beginning to be considered almost a necessary article of school furniture, and in any case few lectures on physical geography, or natural history are without its aid, at all events, in the larger institutions.

Even yet, however, its value as a help in illustrating nearly every branch of instruction is scarcely beginning to be understood, and probably a majority even of the School Boards of our country, who, as a rule, spare no expense in bricks and mortar, would hold up their hands in holy horror if asked to sanction the expenditure of a fraction of a per cent. of what they laid out in buildings to provide a limelight lantern and a few dozen slides to bring much more vividly before the children than any books or talk can do, the subjects of their lessons in geography, history, physiology, or physics.

In our grammar schools and secondary schools it ought to be a constant concomitant, or sort of universal handmaid for nearly all the lessons. In what way can the classical teacher, for example, so vividly bring before his classes the glories of ancient Rome or Greece, as by the use of a few good slides, now so readily to be obtained, or how can he so well give them an accurate idea of the Coliseum or the Parthenon as on the optical lantern screen? True, in some, though unfortunately by no means in all, our better schools more interest is given to the classical lessons by having hung around the room a series of photographs of the places celebrated in classical ore, but such photographs are expensive, and the number available n any one class-room necessarily limited, whereas the slides are nexpensive and easily changed. Again, in the teaching of geography, o important to the commercial student, but, alas, so seldom made nteresting, what a power would the lantern place in the hands of the teacher of impressing upon his class national characteristics, costumes, and scenery! A few slides, for instance, of Paris, New York, or Pekin, would give a better idea, and a much more enduring one, than acres of description. The present generation has, indeed, in this respect, much to be thankful for, for few and remote must be the places where there are not, at least, occasional illustrated lectures or readings of travels in the Holy Land, or in Italy, or Japan, or a multitude of other regions which used to be *terræ incognitæ*. But what is thus done casually and irregularly for those who have left school ought to and might be done regularly and in an organised manner for the pupils in every school, whilst the cost of a set of wall maps would provide the lantern. Perhaps this valuable aid to instruction is more fully appreciated in teaching physical geography and natural history than in any other department, so that it is almost unnecessary to point out how, on the one hand, the phenomena of volcanoes, glaciers, or erosive action can be readily illustrated, or, on the other, the structure of animals can be quite as well shown as by the expensive skeletons of cats and snakes which the London School Board received so much cheap wit for introducing, with the great advantages of less expense and greater variety, whilst the microscopic details of animal and plant life can be most readily exhibited to a large class by means of the lantern slide projected on the screen.

In English history even, although its uses are not, at first sight so apparent, we may still make it a valuable aid. Could we now indeed, get such photographs of life in the time of the Saxons or Normans as future generations will possess of our times, they would be priceless, but failing such vivid aids to comprehension of old lime we can still find valuable illustrations in the shape of lantern slides. Views, for instance, of celebrated battlefields, ancient historical castles or ruins, antiquarian remains, etc., would all lend interest to a history lesson.

Many such instances of the educational value of the optical lantern might be given, but the above will serve as examples, the only drawbacks to its extended use being (1) the expense of the outfit, which is now reduced to a very moderate amount, the whole expense of limelight lantern and oxygen cylinder not exceeding the cost of a good set of wall maps, or a couple of skeletons; whilst slides may either be hired, or a group of schools could each possess themselves of a certain number, and agree upon a mutual exchange. Thus one school might get as complete a set as possible illustrating classical history, another physical geography, and so on; or possibly a better plan still, which will be adopted when the use of the lantern is sufficiently general, is for such central bodies as the College of Preceptors, the City School Boards, and the Oxford and Cambridge Syndicates to make as full a collection as funds will

permit, and lend them out on moderate terms. They will thus help to fulfil the main object of their existence, the promotion of education. (2) The imaginary difficulty of using the lantern—which exists purely in the imagination, as, by keeping a cylinder of oxygen in readiness, and a convenient attachment to the ordinary gas, the lantern can at any time be set in operation within fine minutes in any class-room or lecture-room. (3) The (in many cases forcible) objections to darkening the room in which is a class of boys. This *if necessary* would be a real objection, but slides can be shown sufficiently well if not too highly magnified (say a three-foot disc) in any ordinarily lighted room, particularly if the screen be placed in the most shaded part of the room, and lowering a set of venetian blinds would always give sufficient obscurity for all practical purposes.

Valuable, however, as *is*, and still more so *may be*, the optical lantern as an aid in education, it can scarcely be called an educational agent; nor is it, strictly speaking, photography, although the ease of multiplying photographic slides has done much to popularise that science. There is another aspect, and a more important one, in which photography may be viewed, and it is this the writer hopes to establish. If the uses of the lantern were all it was desired to present, this article need never have been written, as other writers have done much to recommend its adoption, and on that point there is nothing new to add, although it seemed worth while, even at the risk of repeating what has been well said before, to point out the services photography is able to render in this direction. It is as an educational agent properly speaking, that is, in the sense in which classics, or history, or natural science are educational agents, that we desire to speak, and from this point of view, so far as the present writer is aware, its advantages have not hitherto been appreciated. Although a handmaid in the service of education, the optical lantern is no more an *educational agent* than is the diagram employed to illustrate mathematics, or the skeleton used to explain the principles of natural history—it is the mathematical or physiological science *itself* that is the educational agent.

(*To be continued.*)

Societies' Notes.

ON 8th inst., at the Central Photographic Club, Mr. A. Brooker, of Hastings, gave a very interesting lecture on Winchelsea and Rye, illustrated with lantern slides. Starting from Hastings and passing through Fairlight, Pett, Winchelsea, and Rye were reached, with numerous pictures on the road. Local touches of humour, dialect, and comparisons between the country as shown by maps of the fifteenth and sixteenth and seventeenth centuries made up a very interesting and entertaining lecture, which was greatly enjoyed.

THE council of the Durham City Camera Club have decided to hold an exhibition of members' work on February 6th, 1894. There will also be open classes for photographs and lantern slides, silver and bronze medals being at the disposal of the judges. Particulars and entry forms will be ready in a few days, and may be had from the Hon. Sec., Mr. Robert Hauxwell, The Avenue, Durham.

Societies' Meetings.

Aston.—Mr. S. Priddin's practical demonstration on enlarging was thorough in every detail, many "dodges" being well explained, especially in vignetting. He touched on all points, but still kept to the main features of his subject. An ordinary lantern, with circular wick, a four-inch condenser, and a good portrait lens served for the apparatus. From a good professional negative (which was passed round for members to see), he gave at 18 in. distance an exposure of 25 secs. The result was a very fine portrait, pure in high lights, soft and clear in the shadows. The developer used was metol which Mr. Priddin much praised for its clearness and vigour. On 15th inst. Mr. Townsend gave a paper on his recent tour from "Gloucester to Land's End." The views, which were placed upon the sheet, were characterised by good photographic skill, and among the many good slides were some exceptional ones, particularly of the castle on St. Michael's Mount, some views of which were unique as to position and effect. Mr. Tylar lent a new lantern for the occasion by Messrs. Archer and Sons, and after the lecture the optical advantages of the instrument were explained by Mr. Cracroft.

Ashton-under-Lyne.—On 14th inst. a very interesting and instructive address was given on "Photographic Chemistry," by Mr Stephen Sharp, chemist. There was a very good attendance, and Mr. Greenwood occupied the chair. Mr. Sharp illustrated his subject by giving numerous tests of the various chemicals used in photography, and showed the members some simple methods of judging the purity of them. The address was listened to very attentively.

Barnsley.—On 12th inst. Mr. de Mirimonde read a paper on "Hand Camera Work," Mr. A. R. Tomlin occupying the chair. The paper proved a most interesting one, though it dealt mainly with the writer's experiences during the past forty years, showing the difficulties to be contended with in the old wet-plate days. Some enlargements from hand-camera shots, also local snap-shots were shown, being much admired, as were also some competition prints kindly lent by the Editor of the AMATEUR PHOTOGRAPHER.

Cardiff.—On 5th a prize collection of hand-camera prize prints were passed round for inspection of the members. It was considered the judges could not be complimented on the adjudication in Class 9, the silver medal enlargement being a very poor photograph, both from an artistic and technical point of view. Judging from the small print which accompanied it, a far better enlargement should have been turned out.

Croydon (Camera).—A public lantern display was given on 13th inst., when some South African as well as numerous English slides were shown. Musical and vocal interludes were given at intervals.

Derby.—A meeting was held on 13th inst., Mr. R. Keene presiding. It having been suggested to hold an exhibition of photographs in 1894, similar to that held at the commencement of 1893, this question was first brought under consideration to ascertain whether sufficient new work could be obtained from the members to make the exhibition a successful one. It was arranged that it be made a bi-annual one, so that the next will take place early in 1895. It was also agreed to hold an exhibition of lantern slides (made by the members) early in 1894, to which all interested in photography could be invited. The rules of the society were also revised, and the night of meeting altered from the second to the third Tuesday in each month, October to April inclusive, out-door meetings to be held from May to September. It was decided to hold the annual dinner early in January next.

Fairfield.—Annual meeting was held on 8th inst. In the unavoidable absence of the President, Mr. S. H. I. Smith, was made Chairman. After the usual preliminaries, Mr. Smith declared the results of the annual competitions. Class A, the club's silver medal for best set of three prints, was won by Mr. H. Forrest. Class B, best set of six prints was taken by Mr. S. H. I. Smith. Class C, best set of six prints (beginners' class) by Mr. Towers. Class D, best set of six slides, was won by Mr. Elsby. These awards met with great satisfaction. Mr. Smith then called on the Hon. Secretary and Hon. Treasurer for the annual report and balance-sheet, both of which were unanimously passed. The presentation print for the year was then distributed, and the medal in connection with the same presented to Mr. H. Forrest. The election of officers for the ensuing year followed, the results being as under:—President, Mr. T. E. C. Wilson; Vice-President, Mr. H. Holt; Hon. Treasurer, Mr. S. H. I. Smith; Hon. Auditor, Mr. A S. Allender; Hon. Librarian, Mr. A. L. Bindloss; Hon. Secretary, Mr. F. H. Elsby, Rock Farm, Lower Bebington, Cheshire; Hon. Assistant Secretary, Mr. W. J. Sutherland; Council, Messrs. H. J. Mallabar, W. T. Sutton, H. Forrest, A. Vos, C. E. Hancox, and J. Colefield. A lantern exhibition was then held, the medal slides calling forth much admiration. Several other members showed slides, some of them being very fine work. Mr. H. Holt exhibited some particularly fine work, which brought great applause.

Greenwich.—On the 6th inst., Professor Haddon in the chair, Mr. Fry demonstrated the Paget Plate Company's printing-out papers. Upon their process of development he said that the keynote of success was a thorough bromising of the print in the first place, and complete elimination of the developer before toning in the second. As regards the bromising, dirty backs to the prints, or muddy whites, were a clear indication of insufficient time in the bromide bath. Briefly, this part of the process could easily be insufficiently done, and could not be overdone. To leave the partly printed pictures in the 10 per cent. bromide for at least ten minutes was a safe plan. In addition it might be noted that the less the visible impression or image the greater the need for a more prolonged stay in the bromide bath. He was often asked whether other developers would do. No doubt they would, but as the Company's hydroquinone formula had been most thoroughly tested, and found perfectly reliable, what purpose could be served by changing? He saw no reason. After thorough bromising, the important point is to clear the print from developer before toning and fixing. Unless this be done the depth of the print continues to increase during toning, and it is impossible

to say exactly how far the printing will advance, as everything depends upon the amount of reducer (hydroquinone) left in the paper. If the developer were cleared from the print, however (five minutes in running water is sufficient), no further increase in density takes place, and no occasion for exercising a speculative judgment as to how far the print will alter in density arises. After Mr. Fry had demonstrated the process, Professor Haddon said that the thanks of all were due to the Paget Company for a useful method of producing prints by a slight exposure to daylight. Any business man who would get up an hour before breakfast could make in that time as many initial exposures (which could be completed in the evening) as would occupy him all day to make, if he were obliged to print an image right out. Any person could see the advantage of this addition to our knowledge. He was glad that Mr. Fry had called attention to the necessity of longer bromising of the print. The action of the bromide was to convert the chloride and organic salts of silver in the paper to bromide of silver, which was not so easily reduced by light action under a developer, and was therefore more under control. As far as the washing out of the developer before toning is concerned, he referred to some experiments made by Mr. Grundy and himself, and pointed out that the method of washing was most important, and deprecated long soaking as being not only useless but prejudicial. Upon the question of separate versus combined toning baths, Mr. Haddon said the evidence was not conclusive. He had seen prints made thirty-five years ago toned and fixed in a combined bath, which were practically unaltered, whilst others made comparatively recently were faded. The same remarks applied to separate baths.

Hexham.—The monthly meeting was held on the 12th inst., Mr. Jasper Gibson, Vice-President, in the chair. The prints and slides sent in to the recent members' competition were on view, and a number of members' slides were put through the lantern. Mr. W. Parker Brewis, the assistant Hon. Secretary of the Newcastle and Northern Counties Photographic Association, gave an interesting and instructive lecture upon "Lanterns and their Manipulation," and explained the construction and method of working his powerful lime-light lantern. A discussion followed. The lecturer was accompanied by Mr. Edgar G. Lee, who is well known as being one of the best lantern slide workers of the day. A number of his slides, which are now being published by Mr. J. P. Gibson, Hexham—illustrating "Child Life in the Slums," "Street Life," "The Herring Fishery Industry," and marine studies—were shown upon the screen, and were much admired for their artistic treatment, as well as for their local interest.

Kilmarnock.—A meeting was held on 15th inst, the President (Mr. T. Ferguson) in the chair. Mr. Millar gave a most successful demonstration with gelatino papers, viz., Ilford P.O.P., Solio, Nikko, Paget printing-out by development. Each of these papers was illustrated by views that had been taken in Arran. For developing Nikko paper, Mr. Millar uses ½ drm. of Rodinal to 2 oz. of water. The following was given as a good recipe for mounting gelatino prints:—

Best Bermuda arrowroot	3½ oz.
Gelatine (Nelson's No. 1)	160 gr.
Methylated spirits	2 oz.
Carbolic acid (pure)	12 minims
Water (cold)	30 oz.

Mix the arrowroot into a stiff cream with a portion of the water, while the gelatine is placed to soak in the remainder. When the gelatine is softened and the arrowroot well mixed, pour all together into an iron saucepan and bring to the boiling point. Keep at this heat for about five minutes, being particularly careful to stir continually from the moment the mixture is placed on the fire. When sufficiently cooked pour into a basin to cool. When cool add the carbolic acid and spirit (previously mixed) in a thin stream with constant stirring. Then bottle and keep well corked.

Leeds.—On 7th inst. the forty-second annual report was read. The society was founded in 1853, and is therefore the oldest in the United Kingdom. The subjects brought before the society at its meetings during the year have been of great interest and importance; indeed, in this matter it is believed that the society compares favourably with any in the provinces. The following gentlemen were elected as Committee for the ensuing year:—Herbert Denison, J. H. Walker, H. P. Atkinson, B. A. Burrell, F.I.C., T. Butterworth, Godfrey Bingley, S. A. Warburton, H. L. P. London, Robt. Steele, and Dr. Jacob. The best thanks of the society were given to Mr. W. A. M. Brown for his gift of the year's photographic periodicals, also to Messrs. Pearson and Denham for their books. Mr. Godfrey Bingley exhibited a large collection of his new lantern slides, views in Yorkshire, Scotland, West Somersetshire, North Devon, and Cornwall, and his negatives were chiefly made on isochromatic plates and films, and showed very fine results. He received the best thanks of the meeting. Mr. Denison showed some slides made by the carbon process.

Leeds Y.M.C.A.—There was a good attendance on the 15th inst., to witness a practical demonstration on "Enlarging," by Mr. W. A. Daniel. The oxyhydrogen limelight was the illuminating power used, in connection with an ordinary optical lantern. The first example was a quarter-plate negative, which was enlarged on to a 12 by 10 sheet of Eastman's bromide paper, having an exposure of eight seconds. This was developed by the ferrous-oxalate and iron developer, and cleared and fixed in the usual manner. A portrait was next enlarged, which, with an exposure of fifteen seconds, came out splendidly under the action of the developer. A discussion afterwards followed, in which many members took part An exhibition of photographic work will be held on January 13th, 1894.

Leigh.—The ordinary meeting was held on the 7th inst. Mr. T. L. Syms presided over a capital attendance. A demonstration on "Lantern Slide Making" was given by Mr. W. R. Moore and Mr. W. Hampson, Mr. W. R. Moore making his by contact, and Mr. Hampson by reduction with the magnesium light. The demonstration was of great interest to the beginners, and many questions was asked.

North Middlesex.—On the 11th inst. some time was consumed by discussions as to the exhibition just recently held, and also the nomination of the executive for the coming year. The members who had received sample packets of the Barnet lantern plate brought their results for inspection and criticism, and a good opinion of the capabilities of the plate seemed in most cases to be formed. The Thornton-Pickard tripod was also closely examined and criticised. Information was asked, and a discussion took place on the question of the possibility of producing pictures that should show unmistakeably the effect of a bright sunny day. Most members thought it a desirable attainment, and that it could be done, but seemed somewhat hazy as to how to work for the desired end. Mr. Avery said he thought that by giving an exposure just slightly under the normal, developing with a developer very strong in pyro and weak in bromide and ammonia, until the high lights were fully developed, then washing that off, and flooding with another developer weak in pyro and strong in bromide and ammonia, until the detail was all out in the shadows, a negative could be got which, if printed in carbon, would certainly show sunshine. Mr. McIntosh was in favour of rehalogenization. On Wednesday 20th inst. Mr. Beadle will treat on "Bromide Printing." Visitors are welcome.

Putney.—On the 16th ult., Dr. J. E. Farrar in the chair, Mr. S. Herbert Fry having been unable to prepare the necessary prints to illustrate his promised paper on "Unconventional Printing Methods,' was compelled to postpone that subject until a subsequent meeting, substituting a demonstration on the Paget Prize Company's print-out papers and lantern plates. Mr. Fry stated that as the same emulsion was used for the paper and plates, and the treatment was so very similar in both cases, he would confine his remarks chiefly to the plates. These, he said, had many advantages over most others. Their chief qualities were, however, their great range of tones, the tolerable certainty of being able to get any tint, warm or cold; absolute purity in the high lights, and—however deeply printed—great translucency in the shadows. In fact, these slides were quite equal to the old collodion. The plates could be treated in two ways, either printed out fully and toned and fixed, or, if preferred, they could be only partially printed ont and the image developed to full depth, the subsequent toning and fixing being the same as when fully printed out. There might at first be some little difficulty in printing to the proper depth, but generally it would be found advisable to print rather fully, as the image could readily be reduced by immersion in a 2 to 3 gr. solution of ferricyanide of potassium; this bath would also have the additional advantage of clearing the plate. If under-printed, there was a tendency to force the plate and to veil the high lights. As the developer could be modified, great power was given over the resulting image, so that by this method good and artistic slides could be made from practically any negatives. The development presented no difficulties, and the chemicals were those usually found in any photographer's dark-room. The formula for the paper was the same as for the plates.—On 4th inst., Mr. H. Faulkner in the chair. The Chairman said that in the absence, through illness, of Mr. Horsley Hinton, who was to have read a paper on "Work in the Field," Mr. A. E. Leblanc, representing Messrs. A. Schwartz and Co., had very kindly undertaken to give a demonstration on Dr. Andresen's cartridges. The Chairman further said that Mr. Horsley Hinton was fortunately reported to be making satisfactory progress towards recovery, and that there was every reason to hope that he would still be able to give his paper before the close of the season. The lecture and demonstration was followed with sustained interest throughout, as was evidenced by the lively exchange of questions and answers between his audience and the lecturer.

Richmond.—On 11th inst. Mr. Cembrano in the chair, Mr. Birt Acres delivered an able and interesting lecture on "Clouds, their form and movement." Mr. Acres began by alluding to the part which clouds play in the economy of Nature, and then explained the mode in which cumulus clouds are borne of the sea, with the sun for their father, and how, owing to the more rapid radiation on land, the day-formed clouds are wafted landward at night-fall. He gave the theory of the trade winds, with their counteracting upper currents, and many other interesting facts and theories connected with his subject, concluding his introductory remarks with an explanation of the different forms of clouds, according to Howard's classification. Then followed a series of very beautiful lantern slides, mostly in carbon, illustrating cloudland in every conceivable form and aspect. Mr. Acres detailed his *modus operandi*, but it involved the polarising and analysing of the light, by means of nicol prisms.

Redruth.—On Tuesday evening Mr. H. Tonkin, Hon. Sec. Cornish Camera Club, gave a demonstration of bromide enlarging. After describing the usual methods pursued for the amplification of small photographs, with their various advantages and adaptabilities, Mr. Tonkin proceeded to develop two enlargements, stating in detail the various precautions to be taken for the production of the finished result. Afterwards a large number of enlargements, 24 by 18, and over, were exhibited, showing careful finish, good technique, with crisp yet soft and artistic results.

Tooting, on the 7th inst., held their second of this season's Ladies' Nights, devoted to the exhibition of slides by means of the optical lantern. Slides were shown by Messrs. Victor Robinson and A. H. Anderson. Some sixty slides kindly lent by Mr. Dresser were then exhibited. A set of comic slides by Messrs. Wilson and Co., of Aberdeen, lent by Mr. Nock, were also passed through the lantern. They were entitled "A Trip North."

West London.—On 12th inst., the President in the chair. After some formal business in connection with the annual exhibition of members' work, the AMATEUR PHOTOGRAPHER '92 Prize Slides were passed through the lantern, and elicited much praise, especially those by the President, Mr. J. A. Hodges (Gold Medal), and by Mrs. Frances S. Clarke (Silver Medal).

Wolverhampton.—On 5th inst. the ordinary meeting was held, when a most interesting and instructive lecture was given by Mr. Gale on "A Ramble through Shropshire." In his opening remarks the lecturer stated that, probably, in no other county in England was it possible to find such a varied amount of beautiful scenery, or the remains of so many buildings which illustrated the architecture followed by the early English. The lecture was illustrated with lantern slides. The lecturer concluded by referring to the historical, architectural, and general features of the country. Mr. Derrington then made an experiment in flash-light photography, the result of which will be shown at the next meeting. Messrs. Elliott and Son sent samples of their Barnet plates.

SOCIETIES' FIXTURES.

Dec. 21.—HULL—South African Slides.
,, 21.—LEEDS—Grand Lantern Evening.
,, 21.—LIVERPOOL—Lantern Lecture, "A Trip to Chicago," by Mr. W. Harvey.
,, 21.—WOODFORD—Discussion on Toning Gelatino-Chloride Prints.
,, 21.—LEIGH—Demonstrations, "Bromide and Platiuotype," by R. Leigh and T. L. Syms.
,, 22.—CARDIFF—Public Exhibition of Lantern Slides.
,, 22.—HOLBORN (Camera Club).—Lantern Night.
,, 28.—ASTON—Tea and Lantern Evening.
,, 28.—HEREFORDSHIRE—Lantern Evening.
,, 28.—HOVE—"Intensification and Reduction," by G. Foxall.
,, 28.—OLDHAM—Lecture: "Pictures from the Dresden Gallery," by Mr. J. S. Dronfield.
,, 28.—WALSALL—Lantern and Musical Evening.
,, 28.—HOLBORN CAMERA CLUB—Informal Meeting.
,, 28.—CROYDON—Technical Evening.

EDITORIAL.

SPECIAL NOTICE.—Letters requiring an answer in this column must be received by the first post on the Tuesday morning prior to publication. The Editor cannot answer letters by post except under exceptional circumstances.

J. G. HENDRICK says that when we undertake to give the name and address of a manufacturer we might take the trouble to find out how far our information is to be depended upon. This correspondent, who by-the-bye has not courage enough to send his address, spent half a day, so he says, in trying to find a certain firm whose address we gave. He says that our information was wrong. Possibly it was, but if he likes to call at the office we will tell him how to write a civil letter, and tell him where to get what he wants, further, we will take him to the address we gave, and buy for him what he wants, or we will hand over five pounds to the Photographers' Benevolent Association, if he will undertake to do the same, provided we prove that he is in the wrong. We decline to be corrected by a coarse bullying letter. A civil letter containing his address, and an apology, will ensure an answer by telegram.

HOLY BOY.—Have you not made a mistake? The entry forms when printed are always on the advertisement sheets, which can be removed without interfering with the reading matter. Try Barnet for both purposes.

E. HOWELL.—For first attempts we can congratulate you on your results. You do not state what plates and developer you are using. Nos. 1. 2, 5, and 7 would have stood a little longer exposure.

HEATHER.—We should advise you to choose No. 1; this is, so far as we know, the most satisfactory.

R. H. MACHUS.—Many thanks for MSS.; we should have acknowledged before, but have been on the sick list. We hope to use it all.

J. H. ROBINSON.—We are very much obliged to you for your artificial hand, and we will have a block cut to illustrate it.

J. HALPERT, of Russia, asks, (1) "What is the best manner of printing clouds into views?" Print your landscape in sufficently deep, and then remove the print from the frame and replace the negative with the cloud negative, and place your print in contact and insert the back, and use a dark-coloured handkerchief or cloth, and cover over the view with the same, keeping the edge on the move, so as to avoid a harsh outline. By careful manipulation of the handkerchief or cloth it is possible to obtain very good results this way, even when trees, church spires, etc., project into the sky. (2) "Can Ilford P.O.P. be toned and fixed in any bath with sulphocyanide of ammonium?" P.O.P. can be toned in any sulpho bath, but must be fixed as well. If a combined toning and fixing bath is used, of course the print need not be separately fixed. (3) "Does printing from negatives made on plates with a matt back take longer than printing from those made on plain glass?" Yes; the loss of light from the ground-glass is, we should say, fully equal to one-third.

J. E. EASTEY.—(1) The lamp and lantern you name we have used privately with every satisfaction, but a 12 ft. disc can only be properly illuminated with a limelight, it is beyond the powers of oil. The lamp is far better than any four-wick, and as good as the other you name, with far less heat; in fact, it is the best you can get, but the stage is not wide enough to take more than the ordinary demonstrating tank.

W. ROBERTS.—We cannot understand your query; please write more fully.

JOHN ATKINSON asks how to tone albumen print a particular tone. It is a slaty grey. The easiest bath to obtain this in is the old chloride of lime bath. Do not print too deep, and place the prints after a slight washing in the following bath, when you will get the hideous result you want—

Chloride of gold	1 gr.
Chloride of lime	2 ,,
Chalk	40 ,,
Water	8 oz.

R. CARTER.—(1) "Can you tell me of a really good book on toning, wherein I can learn the action of salts in toning, and effects produced by varying quantities of any given salt?" The only book treating at all fully and thoroughly of the subject is "Virages et Fixages," by Mercier, published by Gauthier-Villars in 2 vols., price 5s. This is, of course, in French. Can we help you further? We will if you suggest the lines. (2) "What is the action of ferrocyanide of potash in the developer, and can it be advantageously added to the Ilford pyro soda? The opinions of experts is divided, some saying it is nothing but a weak alkali, others that it has the special property of giving pluck and brilliancy to the negative. We have a particular fancy for the mixture of carbonates of potash and soda with ferrocyanide, and believe it has a special action; it may be that nearly always using it we know it better. (3) "Kindly suggest a good bath for rich purple black or black tones suitable for mauve albumen paper." We can only state that the negative is the most important factor in giving a rich purple black or black tone, and that if you have not this, no bath will give it, but certainly the tungstate or phosphate have possibly a greater tendency. (4) "In toning with tungstate should print be withdrawn when deep shadows still red?" It all depends on the final tone; the prints go back in fixing, and the final result is usually a rich brown; if all the red has gone the tone is purpler. (5) "Will the tungstate bath keep in an active condition?" For a certain time, but, like all alkaline or neutral baths, the gold gradually changes into a stable double salt, when it will not tone. (6) "Is transferring prints from dish to dish with changes of water for two hours sufficient?" Yes, if not too many prints are treated at once, and if they do not stick together. We should prefer to blot off between each change.

SARDONYX.—Many thanks for your good opinion, which we heartily appreciate. The lamp is well worth the cost, and will replace any lamp you have with advantage. The other light you name is useless. We have spent a lot of time on it experimenting, but it is absolutely the worst result we have ever seen.

H. RICHARDSON.—We are fearfully busy just now, but hope in the new year to carry out your wishes. Your letter is encouraging, and we are very grateful for it.

C. W. A. ROSSER.—We are very sorry, and had noticed the fact, but of course we are powerless to help. It is not fair, as you say.

H. R. C.—Letter by post.

R. R. BARRETT.—Yes, we will lend you slides if you call.

F. W. KEPPEL.—Many thanks for beautiful print and good wishes.

F. PARTRIDGE.—(1) We should say, certainly use a slower plate, which will give far greater latitude in exposure. (2) The effect of adding more water will be to make the plate thinner and also slow development, so that it would entail continued and long development, which would cause the deposit in the high lights. (3) We should choose No. 2 under the circumstances, and unless you are going in for very quick work, the single lens. You must note that of course the single lens is much slower than the other. No, we are afraid nothing more will be heard of the paper.

ROUMANIA.—We print "Autumn" coupon this week, and you are at perfect liberty to bring prints, and we shall be pleased to see you if we are in.

G. E. T.—We will write you by post.

J. STEPHENS asks if we have published any papers on Photo-micrography. The following are the principal recent papers:—May 20th, 1892, p. 404, and a very good series by Pringle in vol. 13, 1891. This ran through ten numbers. For simple apparatus there was a good article by Vereker in the *Photo. Quarterly* for January, 1892. Probably the most suitable series for our correspondent is "The Elements of Photo-micrography," by Mikron, which appeared in our issues of June 16th, 23rd, 30th, July 7th, 21st, and 28th, 1893.

CROFT.—We should under the circumstances choose No. 4 saturator, which will answer all your requirements. Of the oils, No. 3.

AMATEUR asks, "What is an amateur photographer?" We give it up; at least, in our own interests we cannot just now define it, but answering your fuller queries, the exhibitor is right and the objector wrong according to the unwritten ethics of latter-day amateur photography, and the receipt of a money prize is not forfeiture of the title of amateur. We have no N. C. U. in photography.

The AMATEUR PHOTOGRAPHER

Telephone No. 1645 — Telegraphic Address: VINEY, LONDON

Offices: 1, Creed Lane, Ludgate Hill, London, E.C.

No. 482. Vol. XVIII.] FRIDAY, DECEMBER 29, 1893. [Price Twopence.

OUR VIEWS.

"To hold as 'twere the mirror up to Nature."—*Shakespeare.*

The Editor is "At Home" on Monday Afternoons from 2 till 5 o'clock, and will gladly give advice upon all photographic matters; and on Thursday Mornings to Members of the Trade, etc., from 10 till 1 o'clock.

Our Views.—A Christmas Appeal—The Kind of Help—Secretaries of Societies—Our Prize Slides—Photographers' Benevolent Association—Taylor, Taylor and Hobson's Standard Screw Fittings—Black *v.* Brown Tones—Photographic Society of Ireland Exhibition—Photographic Convention—Optimus 100 Guinea Competition—Central Club.
Splashes of Ink, by Penfeather.
Letters.—Photography with Magnesium (Forret)—Action of Metol on Skin (Fortune)—Personal Matter (Hemmons).
Articles.—Eder's Handbook—Remarks on Hand-camera Work (Tulloch)—Standard Screw Fittings—Photography as an Educational Agent (Watte)—Question of Developers (Ellis)—The Fountain Air Brush—Thiocarbamid—Mezzotype Paper (Bond)—Retention of Clouds (Norden).
Apparatus.—The No. 2 Frena.
Exhibition.—Bristol.
Societies' Meetings—E. London—Woolwich—Birmingham—Croydon (Camera)—E. Grinstead—Hackney—Ipswich—Leeds—Lincoln—Liverpool—Midlothian—Woodford.
Societies' Notes.
Societies' Fixtures.

EDITORIAL DEPARTMENT.—All Literary Contributions, Queries and Answers, Photographs for Competition or Criticism, Books or apparatus for Notice or Review are to be addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, London, E.C. *(All communications should reach the Editor on Tuesday.)*

TERMS OF SUBSCRIPTION—

United Kingdom	Six Months, 5s. 6d.	Twelve Months.	10s. 10d.
Postal Union	" " 6s. 6d.	"	13s. 0d.
Out of Postal Union	" " 7s. 9d.	"	15s. 3d.

TRADE ADVERTISEMENTS *are received up to Tuesday morning.*

PUBLISHING DEPARTMENT.—All letters containing Subscriptions, Orders, Remittances, Sale and Exchange Advertisements, or other business matters for the Amateur Photographer are to be addressed to the Publishers, Hazell, Watson, and Viney, Ld., 1, Creed Lane, Ludgate Hill, London, E.C. Sale and Exchange *Advertisements (at the charge of Three Words for One Penny) must be received by Tuesday morning's post to ensure insertion in the same week's issue.*

"Holidays with the Camera" Competition. — *Prizes:* Gold, Silver, and Bronze Medals, and Certificates, with Special Prizes of "Niepce" or Progressive Medals for past prize-winners. *Subjects:* All photographs are eligible that have been taken during the "Holidays," but must be Landscapes or Sea Pieces, with or without Figures, Views of Towns, Photographs of Cathedrals, Churches, Public Buildings, etc., but *not* Portraiture, Figure Study, or Pictures which could be classed as "Photography at Home." The Prize Pictures will become the property of the Proprietors of the Amateur Photographer; other Photographs will be returned if stamps be enclosed to cover postage. *Number:* Not more than twelve, or less than six prints are to be sent in. They must all be mounted and numbered to correspond with the numbers in the MS. They will be judged upon their merits as a whole. *Descriptive Notes:* Each competitor must contribute a short account of his holiday, to be not less than 500 or more than 1,000 words. *Date:* All Photographs must be received by the 31st December, 1893. The Photographs must be endorsed "Holidays with the Camera," and addressed to the Editor, Amateur Photographer, 1, Creed Lane, Ludgate Hill, E.C.

Entry forms for Monthly Competitions are printed in the paper, and competitors must send in all the forms with their lantern slides or prints.

Our good friend "Penfeather" makes an appeal on behalf of the Photographers' Benevolent Association, which we hope will be warmly responded to. There are, of course, as a rule at this festive season of the year numerous calls of one kind and another, still we think it possible for a few stray pence to find their way to the coffers of the P. B. A.

Not only is it in money that help can be given, but also with apparatus, books, clothing, boots, etc. If any of our readers have any surplus books, journals, apparatus, or chemicals, we shall be only too glad to receive them on behalf of the indigent photographer, and will sell them, or try to sell them, through our "Sale and Exchange" columns, free of charge, and hand over the proceeds.

Secretaries of societies may possibly find an occasion to make an appeal at meetings, and even help by charging a small fee for entrance to lantern exhibitions. If any Secretary will undertake this when our prize slides are to be shown, we shall be only too pleased to have them used for that purpose; and if the loan of our set of the "Peak and Dale District" can be of use, they will be booked with pleasure.

If those secretaries who have had our prize slides and have not sent the booking fee, and there are some, will send the fees on, we will hand them over to the P. B. A.; and we have determined also to devote all booking fees received for the next six months for prints and slides to the same purpose.

The Photographers' Benevolent Association has for its purpose the assistance of professional photographers who may, through misfortune or other circumstances not under their control, have got into a state of indigence and distress, and during the last twelve months a sum of £150 has been spent, and the income has been only £82.

It must not be supposed that assistance is given blindly and recklessly. In every case stringent enquiries are made, and, as far as possible, the applicants are helped with regard to the best result. Some are set up with apparatus, others provided with clothing, or their wives and families assisted, by small weekly payments, with furniture, food, etc.

In many cases the assistance takes the form of a loan, which, however, is not and cannot be always paid back. In only two cases during the last twelve months have undeserving applicants been assisted. The only wonder is that from amongst so many applicants there are not many more swindlers.

So great has been the depression during the last twelve months amongst photographers that the resources of the association are most severely taxed, and we feel therefore justified in appealing most strongly to all our readers to send us in their mites. We shall not despise the smallest donation or subscription, and will cheerfully acknowledge the same by post and in our columns.

MESSRS. TAYLOR, TAYLOR, AND HOBSON have undertaken a big task which deserves hearty support. They have, as is well known, been most prominent in trying to establish the standard screws for lenses and flanges, and they now announce that they have fitted up machinery and are prepared to alter all existing lens and flange screws at a very low figure. They are prepared to alter 20,000 lenses in this manner.



OF the value of interchangeable lenses, adapters, and flanges it is unnecessary to speak. Every practical photographer knows the amount of time lost in screwing lenses in and out, and doubtless many will take advantage of Messrs. Taylor, Taylor, and Hobson's offer. We print elsewhere some interesting notes on standard screws.

A LOCAL paper commenting upon photography remarks that there has been an enormous change in printing processes of late years, and adds that "the silver print—a metal deposit is liable to rust—is fast following the Daguerreotype into the obscurity of the museum or the venerable family album." This is equal to the usual standard lay disquisitions on photography. Perhaps the writer overheard somebody talking of a rusty-looking print.

AT the Bristol Exhibition there is a striking agreement in favour of warm browns for printing. Side by side on one of the walls are hung two prints from the same negative; one in black, the other in warm brown, and the superiority of the latter not only in half tone but transparency and richness in the shadows is most striking. The comparison is a very fair one, because both prints are by the same process.

THE Phot. Soc. of Ireland offer some special medals for open competition amongst amateurs, at their exhibition, which will be open from January 15th to 29th. We print elsewhere the conditions.

WE are also reminded by the notice containing above that the Photographic Convention for 1894 will meet in Dublin under the auspices of the above society, and we hear that the members of the societies, learned bodies, and universities have taken the matter up so warmly that there is every probability of the coming meeting being one of the largest and most successful ever held.

IN our note as to the Optimus 100 Guinea Competition in a previous issue, we stated that it closed on December 30th. December 31st is actually the latest day, but this is a Sunday. There are, as we stated, nine classes with nine prizes of £10 and three of £5.

AT the Central Photographic Club last Friday, Mr. Sterry read a valuable paper on "Messrs. Hurter and Driffield's Photo-chemical Investigations," which will appear in our next. To-night, the 29th, Mr. Lamond Howie will give his lantern lecture on "Ober-Ammergau and the Passion Play," which all those who know Mr. Howie will at once recognise as well worth hearing. Visitors will be heartily welcomed.

Splashes of Ink.

BY PENFEATHER.

I HAVE noticed that more than once lately you, Mr. Editor, have replied, in your "answers to correspondents," to the query—"What is meant by a ten per cent. solution?" To those who are conversant with the intricacies of our system, or, rather, want of system, of weights and measures, the question appears a very reasonable one to ask. As a matter of fact what we photographers call a ten per cent. solution is not, strictly speaking, a ten per cent. solution at all. A ten per cent. solution should mean a solution ten *grains* of which would contain one grain of the substance in solution. *We* use the term to mean a solution of which ten *minims* contain one grain of the substance in solution. However, as long as we all understand the term in the same sense, no harm is done by the fact that it is not a strictly accurate one. The error arises, as most of our difficulties of the same kind do, from the fact that we have three systems of weights, with a common unit—I was about to write, fortunately with a common unit—but perhaps it should be unfortunately, for in that case the burden would be so intolerable that the inconveniences attending a unification of the systems would be less than those arising every day from the existing ones, and a rearrangement on a scientific basis would be imperative. The error arises, as I have said, from the fact that we have three systems of weights with a common unit, and a system of measures with a unit which agrees with none of them. The three systems of weights are avoirdupois, troy, and apothecaries' weights. The unit, the grain, strictly speaking, belongs only to troy and apothecaries' weights, but it has been adopted in the other, doubtless because the lowest weight, the drachm, or 1-16th of the ounce, was found too large for many purposes in practice. The ounce and pound are the same in troy and apothecaries' weights, but we may dismiss "troy" from further consideration, since it is used only in buying and selling the precious metals, and never in chemical formulæ. Avoirdupois, which is used always in buying and selling chemicals, has the ounce equal to 437½ grains, with an intermediate weight, the drachm, equal to 27⅜ grains. In apothecaries' weight the ounce equals 480 grains, the drachm, one-eighth of the ounce, 60 grains, and the scruple, one-twenty-fourth of the ounce, 20 grains. In fluid measure we have a strange mixture of the avoirdupois and apothecaries' systems. A fluid ounce is the measure of one ounce of water by weight avoirdupois, but the fluid ounce is divided like the apothecaries' ounce, into drachms, or one-eighths, and also into 480 parts, or one sixtieths, of the drachm. These parts are called minims. It follows,

therefore, in consequence of this strange conglomeration, that the minim, the unit of fluid measure, equals 1-480th of 437½ grains of water by weight, or $\frac{17}{15}$ of a grain. That the minim is not the same as a grain of water is of little consequence, provided that the fact be understood, and I have gone into the matter simply for the purpose of showing how the inaccuracy of the term 10 per cent. solution, as we apply it, arises.

The advantage of keeping solids in solution is that it takes less time to measure than to weigh, to say nothing of the time necessary to allow the substance to dissolve; and in the case of fluids there is the advantage of the greater ease of measuring a considerable bulk than a very small one within a reasonable degree of accuracy. It must, however, be said that when extreme accuracy is required there is less likelihood of error in weighing than in measuring, but *extreme* accuracy is rarely required in most photographic manipulations, such as development, and if ordinary care be taken ten minims can be measured in a minim measure with sufficient precision for all practical purposes.

Having grasped the theory, it requires some little thought to put it into practice. Let us take an example, and suppose that it is required to make a ten per cent. solution of bromide of potassium. If an ounce of this be bought, there will be 437½ gr., and it is requisite to make a solution, ten minims of which contain one grain of bromide. The bulk of the solution should, of course, measure 437½ × 10 minims = 4375 minims or nine fluid ounces and 55 minims, in round numbers 9 oz. 1 drachm fluid measure. Now if this quantity of water be taken, and the bromide added to it, it is obvious that the bulk will be increased by the presence of the bromide. What is required is that the bulk of the solution should equal 9 oz. 1 drachm, including the bulk of the bromide. The bromide should therefore be dissolved in a portion of the water, and then made up to the proper quantity. In making a ten per cent. solution of a fluid, such as liquid ammonia, there is another matter for consideration. What is required is a solution of which ten minims contains one *minim* of the fluid substance. In this case one ounce fluid of the ammonia should be made up to *ten* ounces with water. Some substances—hydroquinone, for instance—are not sufficiently soluble to make 10 per cent. solution. In such cases a solution of less strength must be made. 5 per cent. if possible, in which case 20 minims will contain one grain of the substance.

Very few who have used 10 per cent. solutions to work with in developing would willingly abandon the system. Any formula may be made up with the utmost ease, and to enable this to be done all that is necessary is to work out the amount of each substance contained in 1 oz. of the developer. Further, the developer may be modified by adding more of any of its constituents during development without losing count of the exact quantities contained in it. This, of course, it is impossible to do in employing the methods directed by most of the dry-plate makers.

This season of the year, when we take "goodwill towards all men" as our guiding sentiment, is an appropriate one to say a few words on behalf of that deserving institution "The Photographers' Benevolent Association." In times of depression in trade like the present it is obvious that those who feel the want of business first and most are they who provide the luxuries of life. We cannot do without our daily bread, but we can manage to get along without photographs. Hence it is that many photographers who in prosperous times just succeed in gaining a living, are now in dire distress, and many of those who were able to subscribe to a charitable institution such as this now need all they can earn for their own personal necessities, so that, with a decreasing income there is an increasing expenditure, a state of affairs which may be aptly compared to burning the candle at both ends. It is an admirable feature in the management of the Association's work that those whose misfortune it is to need assistance are not subjected to the indignity of having their unhappy position advertised to the world; but this very fact acts in a very detrimental way to its finances. I am assured that among those cases that have been brought before the committee there are some that would create the utmost surprise were the facts to be published, men whose names are honoured wherever a record in the progress of photography is honoured, begging for help to keep the wolf from the door. But, of course, the majority of the applicants for relief are not of this class. We can all understand that, when trade is low, every business man seeks to curtail his expenses, and that, with less work coming in, the staff has to be reduced, so that, with many operators out of work, there are few places vacant. It is of no use attempting to turn to another pursuit, for all trades are equally overstocked with workers, and when the savings are exhausted the last resource is an appeal upon the funds of the Benevolent Association. Naturally, under these circumstances, the expenditure is in excess of the income. We, amateur photographers, can do something to help matters by subscribing a trifle. If every reader of the AMATEUR PHOTOGRAPHER would send sixpence a year, the Photographers' Benevolent Association would become a rich institution compared with what it is at present, and if you, Mr. Editor, will open a subscription list I feel sure that you will be able to hand over a sum that will not disgrace you. Please put me down as a struggling journalist for 5s.

Letters to the Editor.

PHOTOGRAPHY WITH MAGNESIUM.

SIR,—In your description of magnesium lamps, in last week's issue, you place the "Optimus" lamp first, and state that it is actuated by an india-rubber air-pump. You then refer to the "Todd-Forret" lamp, and state that it is constructed with a similar air-pump, and that the manner of using the lamp is exactly the same as with the "Optimus."

Now, sir, this conveys the impression that the "Optimus" preceded the "Todd-Forret," while, as a matter of fact, the "Todd-Forret" was in the market many months before the "Optimus" was heard of.

We were not aware of this bellows arrangement being in use for such a purpose prior to the sealing of our patent.

As co-patentee of the "Todd-Forret" lamp, I ask you in fairness to publish this letter.—I am, yours, etc., J. A. FORRET.

Edinburgh, Dec. 19th, 1893.

[Our correspondent has jumped to a conclusion which we never for one moment intended to convey.—EDITOR.]

* * * *

THE ACTION OF METOL ON THE SKIN.

SIR,—Having been told at a demonstration before a London society that metol was a fairly good developer for bromide enlargements, I tried it for several single prints and found it worked very well.

A fortnight ago, however, I used some of it to develop a lot of chloride prints, and was consequently dabbling in it for some time. Now the demonstrator had told us the metol powder itself would stain the fingers if it got on them, but the solution would not do so, which was quite true so far as the staining is concerned.

I think, however, that my case ought to act as a warning to all who might be about to try this developer, for although it certainly did not stain, it made an awful mess of both my hands. First came an intolerable itching, followed by swelling in all my fingers accompanied by strong inflammation, the skin cracked in all directions with deep angry-looking cuts, and, although poultices, etc., have partially recovered them, they are still exceedingly painful and inflamed. I have since then met another man who has been served in the same way, and I hope this warning will not be thrown away, if you can insert it in your popular paper. The only safeguard I can see would be only to use metol when the fingers were safely covered by rubber finger-stalls.—I am, yours, etc., C. E. FORTUNE.

* * * *

A PERSONAL MATTER.

SIR,—I appreciate, although I do not agree with, your candid criticism of my little "Moorland" picture at the Bristol Exhibition, but your remarks as to false lighting demand a disclaimer at my hands.

The light that casts the shadow is not in the picture, but comes from the sun that is just setting. The light in the cloud is reflected light from the setting sun, and casts no shadow. However the lighting may appear photographically, I can only say that it is correct according to Nature.

The "impressionist" style of the photograph is, of course, a matter of taste, and I only claim a humble attempt to represent nature as I saw it.—Yours faithfully,

W. CROFTON HEMMONS.

Dark-Room at Buxton.—Mr. F. Crossley, chemist, of 5, The Colonnade, Buxton, has fitted up a dark-room for changing and developing.

East London.—Ordinary meeting 12th inst., Mr. E. Stone in the chair. Mr. John H. Gear was elected a member, and was unanimously voted President of the society, in the place of Mr. J. S. Pasco, A.P.S., resigned. A question from the question bag was read, "What is the best method and plate to use, to photograph a house of red granite, having gilt letters upon the surface?" An Iso plate, stop *f*/32, a dull light, and short exposure, was recommended, and the developer to be compounded with three time the normal quantity of pyro. The remainder of the evening was then devoted to a discussion on the negatives from which the prints were taken which had gained awards at the recent exhibition of the society. Many hints were given, regarding their dimensions, and in some instances it was thought that better results were obtainable by the use of printing paper other than that which had been used.

EDER'S HANDBOOK OF Emulsion Photography.

TRANSLATED BY THE EDITOR.

CHAPTER X.—*Continued.*

JANSSEN observed in his solar photography on gelatine plates also the reversal of the image by solarisation, when, instead of the correct exposure, which amounted to 1-20,000th of a second, he protracted the same to one-half to one second.[1] He found that with further protraction of the exposure the solarised position again disappeared, and after a million times over-exposure again a *negative of the second series* could be developed; further exposure destroyed also this image.[2] Haack expressed the opinion at the meeting of the Vienna Photographic Society on 12th May, 1880, that this form was incomplete, but perhaps it could be made use of for the *multiplication of negatives.*[3] Bolas observed that the preparation of direct positives succeeded much better if the bromide plate was impregnated with an oxidising substance such as bichromate of potash, dried, and then exposed.[4] Under the influence of the developer the image is reversed; a well-detailed and sufficiently vigorous duplicate negative is formed, which should then be fixed. Too short exposure gives by this process flat images which quickly developed, too long exposure gives hard and slowly developing pictures. According to the researches of Pizzighelli and Dr. Eder[5] it appears that *in this process the solarisation plays quite a subordinate part, and that the chief cause is to be ascribed to the chromated gelatine becoming partially insoluble.* There is formed on the gelatine plate impregnated with bichromate of potash a modelled, more or less insoluble gelatine image; by treatment with the developer this penetrates in the unexposed places, and acts, therefore, on the places of the image unequally. One notices, in fact, that a negative developed according to Bolas's method shows a more or less strongly swollen relief, and that the developer is quite repelled in some places—exactly the same method, with even the suggested explanation Captain Biny published nearly a year later again, without making mention of his predecessor.[6]

On the use of this process for the preparation of reversed duplicate negatives, see further on.

(VII.) INFLUENCE OF TEMPERATURE ON THE FORMATION, THE DEVELOPMENT, AND DESTRUCTION OF THE IMAGE.

Variations of temperature between 5° and 25° C. Dr. Eder found without influence on the photo-chemical destruction of the dry bromide plates, and relatively on the formation of the latent image. if the plates after exposure and during the development were kept at one and the same temperature. If the developer be warmed, the time of exposure may be shortened. Even fluctuations of temperature of 5° to 10° C. are of marked influence. Sutton[7] had recognised even in 1871 that in hot weather the alkaline pyro developer acted much quicker and more vigorously than in cold weather. With gelatino-bromide plates, especially when using ferrous-oxalate developer, the appearance of the image is strongly influenced by the temperature of the liquid. At 0° C. it is very difficult, in spite of long development, to obtain vigorous negatives. The same plates give in the same developer at 16° C. great density in a shorter time. Fabre[8] concluded from this, that with gelatino-bromide plates and ferrous oxalate at too low a temperature one could not obtain sufficient density.

A warm, strong pyro developer made according to Nelson's formula acts more energetically than a cold one. It has been observed that the same fogged the plates, whilst it worked clear in the cold. Increase of the bromide of potassium in the developer lessens the fog less than diminution of the addition of ammonia to half or quarter. It is advisable to keep the temperature cool, especially with the soda developer, or otherwise it gives flat pictures, much more so than ammonia and pyro, whilst in cool weather it works more brilliantly than ammonia and pyro.[9]

Dr. Eder[10] instituted exact sensitometrical experiments on the influence of the temperature of the developer. A bromo-iodide emulsion with 4 per cent. of iodide and half an hour's boiling was used; the following results were obtained:—

(A) OXALATE DEVELOPER.

Temperature of the developer	4 to 8°C.	16 to 17° C.	26 to 28° C.
Duration of development, 1 min.	3° Warnrk.	8° W.	13° W.
" " 2 min.	$9\frac{1}{2}$° "	10° W.	15° W.

(B) PYRO DEVELOPER (PYRO SULPHITE WITH AMMONIA).

Temperature of developer	1 to 2° C.	26 to 28° C.
Duration of development, $\frac{1}{4}$ min. ...	6° W.	10° W.
" " 3 min. ...	14° W.	15° W.

In both cases the development took place quicker at the higher temperature, and yielded in the given time greater sensitiveness and greater intensity. The difference was especially apparent in the beginning, whilst with continued development, four to five minutes, for instance, the differences were not so great. Cold oxalate developer yields only with difficulty or not at all great intensity of the image; cold pyro developer, however, gives plenty of intensity, especially if more alkali is added.

If one heats a gelatino-bromide of silver plate from the back by means of a hot iron, the film becomes yellower, and on cooling, grey. The colour disappears when the temperature has become even. If such a plate is exposed before the balance has taken place, it will be found that the heated parts are actually more sensitive, the cold, on the contrary, less sensitive. If, however, the balance of the temperature has taken place, no action is noticeable. It is immaterial when the development takes place, if only the differences of temperature and exposure fall close together. With paper the appearance is the same (Abney).[11] According to Tóth[12] the sensitiveness of a dry bromide emulsion heated for seven hours at 100° C. rises a little; it gives good pictures, only the gelatine is more difficult to dissolve in water. Heating the bromide plates for five minutes to 110° C. makes the same generally more sensitive, the action of the solar spectrum extends towards both ends; also after cooling the sensitiveness remains somewhat greater, but the difference between such a plate and one not heated is very little. At 130° C. decomposition appears; the plate fogs in developing (Schumann).[13] The heating of gelatine plates at or before exposure has never been much used in

[1] *Moniteur de la Photogr.*, 1880, vol. 24, p. 114, from "Comptes Rendus," June, 1880.
[2] *Brit. Journ of Phot.*, 1880, vol. 27, p. 402.
[3] *Photo. Corresp.*, 1880, vol. 17, p. 101.
[4] *Photo. News*, 1880, vol. 24, p. 304.
[5] *Photo. Corresp.*, Feb., 1881, p. 45.
[6] *Bull. de l'Assoc. Belge*, 1882, p. 21.
[7] *Brit. Journ. of Phot.*, 1871, vol. 18, p. 554. This statement applied to collodion plates.
[8] *Bull. de l'Assoc. Belge de Phot.*, 1880, vol. 7, p. 297.
[9] Brooke found that ammonia and pyro developer at 26° C. in the height of summer always produced fog; when the developer was cooled to 15° C. the plates remained clear, and at 5° C. stood without harm forcing with ammonia.—*Brit. Journ. of Phot*, 1882, p. 488.
[10] *Photo. Corresp.*, 1883, p. 87.
[11] *Brit. Journ. of Phot.*, 1884, p. 306.
[12] *Photo. Corresp.*, 1884, p. 205.
[13] *Phot. Wochenbl.*, 1884, p. 229.

practice. Henderson[1] dried gelatino-bromide of silver plates in a water bath, exposed them when cold, and found that the plates were more sensitive and gave denser images. Burton[2] covered half of a bromide plate and exposed the whole for a short time to the heat of a hot iron, not quite red-hot; the uncovered part fogged in the developer. According to Drescher[3] an hour's heating at 40° C. should destroy the latent image on bromide of silver; on the other hand, photographic practice says that plates preserve the latent image for days and weeks at even higher temperature in tropical parts.

The development of gelatine plates in tropical countries offers many difficulties, since the film is subjected to the risk of frilling. Dr. Stolze remarks, however, that according to his experience a temperature of 30° C. is no obstacle to development; it is, however, necessary to harden the emulsion by addition of alum, so that it does not frill at this temperature. Gaedicke instituted experiments on the behaviour of the latent image in gelatino-bromide of silver when heated, and found that temperatures of 60 to 70° C. did no damage to the image, that higher temperatures of 85 to 90° C. did not indeed destroy the image, but produced fogging of the same, whilst with long heating at 100° C. general reduction in the developer appeared. (*Photo. Mitth.* vol. 23, p. 191.)

[1] *Photo. News*, 1884, p. 447.
[2] *Brit Journ. Phot*, 1882, p. 369.
[3] *Photo. Archiv.*, 1882, p. 126.

(*To be continued.*)

Remarks on Hand-Camera Work and Hand Cameras.

By J. K. Tulloch, M.B.

(*Continued from page* 418).

Having the dark slides, and having other lenses in my possession, I determined (keeping No. 2 just as it was) to design and make up camera No. 3. The conditions which I set myself to fulfil were these more particularly: that the camera must be light and small and quite inconspicuous in appearance, so that it could be carried through the streets without attracting attention.

By this time I had given up the idea of having the camera itself weather-proof, a condition which, as I stated before, I did not see how it was at all possible to fulfil; and, even with regard to a weather-proof case for it, I had come to this idea, that a square of india-rubber cloth, carried in the pocket for emergencies, was all that was actually required.

I had now only one difficulty, and that was, how to fit neatly and inconspicuously a drop shutter to the camera, so that the whole apparatus might have the appearance of one box.

Although I gave much consideration to this question I found no solution to it. I finally abandoned the idea of a drop shutter (which I am extremely partial to) with great regret. One would imagine that there ought to be little difficulty in enclosing a drop in the end of the box somehow; but a patent difficulty is this, if this drop is kept at "set," you almost double the length of the shutter, which either sticks out awkwardly beyond the sides, or, if you make the body of the camera large enough to conceal it, makes a large camera. If you keep the shutter half way no part projects; but the lens is now constantly exposed, and thereby liable to dirt or destruction. An easy way out of this difficulty would be to have a leather plug to place in the aperture of the shutter. This seemed to me to be makeshift and unsightly, for, by it, it entailed another movement, to be remembered and carried out at the moment of exposure.

Having abandoned the drop shutter, I cast about for a substitute. The conditions to be fulfilled were these: it must be small, so as to be enclosed as part of the camera; it must be constant in its speed, not over-fast; and, lastly, it must be easy of release and easy to make. All these conditions seemed to point to a pivoted quadrant of some kind, and this was the form I eventually adopted.

It will be easier to show you than describe camera No. 3. It is a plain mahogany box, covered with morocco, an oblong aperture at the back to take a dark slide, while the lens is carried on a false front, two inches from the actual front, and which two inches of space are taken up with the lens, mount, and shutter. The actual front fixes with a spring catch, so that I can easily get in to the diaphragm plate, while, at the same time, it gives facilities for the repair of the shutter, should such be needed.

The lens I use in this camera is a Wray 5 by 4 wide-angle landscape. When making the shutter, I arranged it so as to be actuated by an elastic band, and it worked smoothly and well. The speed was greater than I liked. It was getting well into October when this last camera was finished, and I found that the light was too poor to give me well-exposed pictures with this shutter. A trifling alteration made it, that I could drive the quadrant over by a touch of the finger, and this I found by experience to be an excellent idea. It was now possible to give exposures of almost half a second. It occurred to me, as it must occur to you, that, with an exposure so prolonged, definition was bound to go. To my surprise, I found this not to be the case. Once or twice I did get blurred pictures, but in general they were quite sharp. Thinking over the matter at home one day, and making a few experiments to determine the matter, I found that the blurred pictures were not due to tremor of the hand, but rather to the general sway of the body on the legs.

At my next outing with my camera, I found that it was almost always possible to get something to lean on while exposing the plate, and from that moment I had no more blurred pictures. Until one has experienced it, he can have no idea how opportunity favours him in the matter of "leans." In the short time I have had this camera I have exposed a few dozens of plates, not once have I been disappointed in a "lean." This is by no means only a matter for amusement—it has its important side. It simply means that throughout the year the hand-camera need never be laid aside as useless. I may say, as a parting remark on camera No. 3, that it has proved in every way very satisfactory.

Being still possessed of the spirit of camera construction, and my material not being quite used up, I determined on a fourth camera. As in camera No. 3 I had sounded the depth, so to speak, of prolonged exposure, my aim now was towards very rapid exposures.

I have had in my possession for a good many years a diminutive portrait combination. The equivalent focus is about three inches, and it gives fine definition over a circle of about two and a quarter inches, with full aperture about an inch. This was manifestly the very lens.

I have no wish to dwell on the making of this camera. Artists and nations are said to have their periods of gradual ascension and decline—clearly I was following the same law. I had reached the high-water mark of construction in camera No. 3, and there came to me the fixed and rooted notion that No. 4 would be a botch.

To set out upon any enterprise in this frame of mind was to bespeak failure. At every turn some cursed thing turned up to annoy and disconcert me. A piece of wood, which a moment ago measured five inches, now, for some unaccountable reason, measured six, my solder refused to run, the glue got thick and burned in the pot. Reverses are supposed to do people good in the long run; my reverses raised the very devil in me, I got more determined every moment; once I very nearly knocked off a finger with my hammer, I forbore to utter a single sound, I sat dogged with my finger in my mouth, and thought of Arnley's fine verse—

> "In the full clutch of circumstance
> I have not winced, nor cried aloud
> Under the bludgeonings of chance;
> My head is bloody, but unbowed!"

It was under such circumstances as these that camera No. 4 was dragged into existence. The shutter, a modified roller blind, works fast enough, and, indeed, is the one redeeming point in the whole thing. Having no leather to cover the body, I used American cloth, and this turned out one of the biggest mistakes I made. American cloth is cold and clammy to the hand, and, being waterproof, the glue which fastens it on seems never to dry. I have exposed not more than a dozen of plates in camera No. 4, and, as was to be expected from such an ill-starred venture, every one, for some reason or another, turned out a failure. Only one good negative out of the lot, and the mark of Cain was upon it, in the shape of a running boy with legs in ridiculously preposterous positions.

Having now described my four cameras, this incident of the running boy suggests to me the remarks I have to make upon hand-camera work. In my reading up of the subject, I notice that both Mr. Dresser and Paul Lange recommend a swift shutter. I confess to not seeing the force of this.

If these gentlemen have light, and lenses, and plates requiring so short an exposure, I have nothing to say. If, on the contrary, a high speed is thought to be necessary, either to prevent the appearance of hand-shake in the picture, or to take without signs of movement rapidly moving objects, then I part company from them here.

I have proved to my own satisfaction that a very prolonged exposure may be given without signs of hand-shake in the picture; and as for the photographs of rapidly moving objects, is it not a great mistake to photograph them at all? Examine a photograph of

a street scene. Let us say that it is such a scene as requires a very fast shutter, that is, where the moving objects are not far from the camera. Can any one seriously argue that the resulting pictures, with their novel, if not grotesque, posing, are things of beauty? Is it not rather the fact that, in a great many instances, the postures of both men and beasts suggest drunkenness or imbecility? The argument that the positions shown by instantaneous photography are the correct ones, and that the posings and positions painted by artists are conventional and erroneous, will not stand a moment's serious consideration. When an instantaneous photograph of a number of persons moving about is shown round, what is the very first thing that is noticed and remarked upon? Is it not the ridiculous position of the limbs, and the apparently impossible attitudes in which the individuals are discovered?

Why should these things appear so absurd and strange? Do we not all day long see people walking up and down in every-day life? How can any representation such as this be said to represent what we really see when nobody recognises the truth—nay, I go a step farther, when the great bulk of people even deny the possibility of its truth?

To say that we have all along been deceived by the artist, and that, when we have outgrown the bad lesson, we will see the truth of the photograph, is nonsense. How has it never occurred to mankind that he was being deceived before? He had all along his everyday experience and his eyesight to guide him. The truth is photography renders outside nature *not* as we see it, but as it really is, a very different thing.

There is a wide sphere and a great future for the hand-camera; but, in my opinion, the first lesson that must be learned is what the hand-camera can *not* do.

Standard Screw Fittings.

MESSRS. TAYLOR, TAYLOR, AND HOBSON have, as is well known, done their best to establish a system of standard screws.

Mr. Wm. Taylor, of the above firm, who was a member of the Opticians' Conference appointed by the Convention Committee, and also of the recent Standards Committee of the parent society, in a paper before the P.S.G.B, gave some interesting particulars, some of which we abstract.

First it was necessary to have *free* interchangeability of screw fittings—not that of the gas fitter and plumber, where the screws and nuts, etc., were forced by wrenches to be interchangeable. Even one-thousandth of an inch difference in a standard male screw will effectually prevent it entering into a standard female screw of correct gauge; even errors smaller than this are too great. With such requirements of nicety one of the first conditions of all makers' lenses being interchangeable is that there must be a system of accurately measuring the screws, and there are three principal elements to a screw, shown in section (fig. 1).

p, the pitch of a screw, which in general terms we speak of as

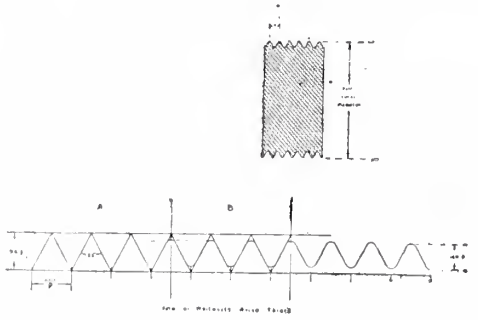


FIG. 1.

coarse and fine, is the distance between two successive threads, or turns of the thread, measured in a direction parallel to the axis of the screw.

d, the nominal diameter of a screw, is usually the measure of the full outer diameter of the male screw. Thus the two-inch standard male screw measures two inches over all, and it is a simple thing to measure this diameter accurately by placing the screw between the plain measuring faces of a micrometer gauge or measuring machine.

In order to fulfil our condition of free interchangeability, it is necessary not merely that this full outer diameter of a male screw be at least as small as the normal; it is also necessary that upon the sloping sides of its threads and at their base or root, the screw should be everywhere sufficiently small. Equally important then with the full outer diameter in securing free interchangeability of screws is the thread form, which determines the size of the screw on the sloping sides and at the bottom or root of the threads. The form of thread is taken as its cross section in a plane containing the axis of the screw. The diagram shows the form adopted in the Society's standards, and which is known everywhere as the Whitworth thread. It is a form beautifully adapted to the purpose for which it is chosen. It is planned in this way (see fig. 1): A base line is divided into sections, each of a length equal to the pitch of the desired screw. Upon these sections of the base line, isosceles triangles are formed by drawing lines inclined to each other at fifty-five degrees. A line parallel to the base line and touching the apices of the triangles will stand above the base line ·96 of the screw pitch, and will include another series of triangles between the first and similar to them but inverted as at A. By means of equal circular arcs, one-sixth of the height of every triangle is rounded off its apex, as at B, leaving the form of thread as at C. The depth of the Whitworth thread is ·64 of its pitch.

Suppose that we have a screw already made, and we wish to measure its thread form. The full outer diameter of the screw is easily measured by placing it between the plain jaws of the measuring machine, as shown at A in fig. 2. This full diameter of the screw is represented by the height of the first thick black line to the right. The depth of thread in any place may be measured by providing the little test piece shown at D, and on a larger scale below in the diagram. This little hardened steel bar of triangular section has its lower edge very slightly rounded, and its measurement, C, accurately de ermined. When placed along and between the threads

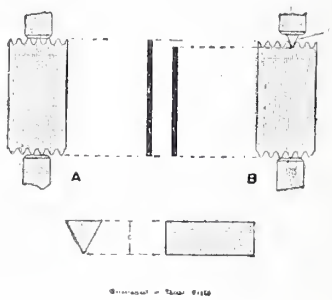


FIG. 2.

of a screw in the direction shown at D, it touches the screw only at the root of the threads, and, by measuring the diameter of the screw, including the test-piece, in the manner shown by the figure, it is easy to determine, the depth of thread; for if we subtract from the measurement so obtained the constant measure, C, of the test-piece, we get a result, indicated by the shorter thick black line, which is less than the full diameter of the screw by exactly the depth of the thread. With due care, and with simple appliances, these measurements may be made correctly within about one five-thousandth part of an inch, which is sufficiently accurate for practical purposes.

The diameter of a screw, as measured on the sloping sides of its threads, may be determined by the aid of a simple application of trigonometry. One easy method, applicable under certain conditions when the angle of thread is known, is to use a small cylindrical gauge placed along and between the screw-threads, so that it bears only against the sides of the threads in the manner shown in fig. 3. The question to be solved by using this little gauge is this—Are the threads of the screw, so to speak, too fat, as at F, or too thin as at T?

You will see that, if the threads are fat, the little gauge will stand too high above their tops. If the threads are thin, the little gauge will sink too low between them. It is a simple matter to discover just where the gauge should stand in relation to the thread-tops, and it is simpler still, and just as useful, to find where it should stand in relation to the base or root of the threads. If the sloping sides of the threads had been continued downwards to form a thread not rounded at its root, but sharp, it would have been of the form shown in fig. 4; and, knowing both the diameter of our little cylindrical gauge and the angle between the sides of the threads, it needs only a simple application of trigonometry to decide where the gauge should stand in relation to the point P. We know, by the construction of the Whitworth thread, that an amount equal to ·16 of the screw pitch is rounded off the sharp angle to form the rounded root of the thread. Knowing, then, how far the cylindrical gauge should stand above the point P, we can easily find how far it should stand above the base or root of the threads, and how far above their crests.

For practical purposes, the necessary calculations may be made once for all, and I prefer to construct for each pitch of screw to be

dealt with a small cylindrical gauge, of such diameter that it shall stand, when in use, one or two-thousandths of an inch, or some such simple recorded distance above the crests of a perfect or normal thread.

The radius of such a gauge for this purpose may be found by the formula :—

$$\frac{1{\cdot}25\,d - p}{3{\cdot}1656},$$

where d is the depth of thread, and p the desired convenient projection of gauge above the crests of the thread. The main features of this problem are shown in the diagram (fig. 4).

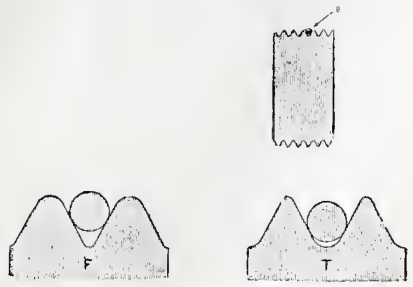


FIG. 3.

If it be necessary to measure the angle between the sloping sides of a screw thread, it may be done by using a second gauge, small enough to lie between the threads close down at their root.

The common methods of cutting screws are very simple.

Let us take the case of a male screw. The piece to be screwed is held and made to revolve in a lathe, and its outer surface is turned truly to the form of a cylinder approaching the full outer diameter of the desired screw. Then what is called a comb or chaser is brought into use. This instrument, which may be bought at the shops, is a cutting tool roughly in the form of a common chisel, the working end of which is serrated, the series of alternate indentations and projections presenting exact counterparts of the thread form and pitch of screw which it is desired to cut. This chaser is pre-

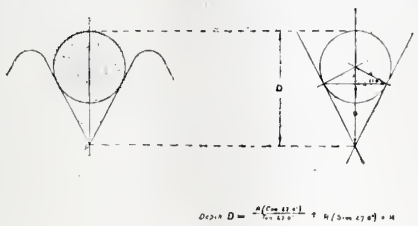


FIG. 4.

sented to the revolving piece of work, and, sometimes by hand, sometimes by machine, it is moved in a direction parallel to the axis of the lathe, so that it cuts a spiral groove along the cylinder and forms it into a screw. The form of the screw thread is determined by the form of the teeth on the chaser.

(*To be continued.*)

Reviews.

Photography of To-day, Contrasted with that of Forty Years Ago. By I. C. Johnson, J.P. Published by R. Banks and Son, Racquet Court, Fleet Street, E.C. Price 6d.

The matter of this pamphlet was an address delivered by Mr. I. C. Johnson before a public meeeing on the inauguration of new rooms for the North Kent Amateur Photographic Society, of which he is President.

Mr. Johnson commenced practising photography soon after Archer's introduction of collodion in 1851, and his experiences and contrast of the old and present methods of working are interesting and entertaining.

Putney.—On 14th inst., Dr. W. J. Sheppard in the chair. A good muster of members and their friends had assembled to see the AMATEUR PHOTOGRAPHER Prize Slides being passed through the lantern. The slides were of a uniformly fine quality, and were much appreciated by those present.

Apparatus.

THE NO. 2 FRENA.

FOR QUARTER PLATES.

R. AND J. BECK AND CO. have, we are glad to say, placed this new size of their well-known camera on the market, and whilst embodying all the advantages of compactness, simplicity, and lightness of the smaller size, considerable improvements have been made.

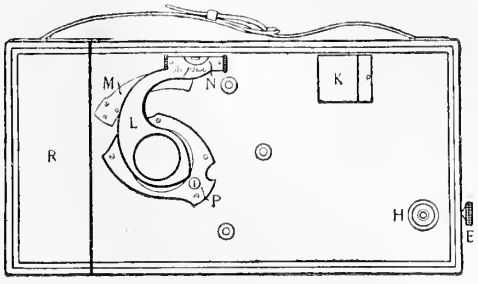


FIG. 1.

Fig. 1 gives the external view of the camera, which is covered with black leather, and measures 11¼ by 5½ by 4½ in., and weighs, when fully charged, 4 lb. E is the knob by which the shutter is set, H is the release to fire same, K the horizontal finder, the handle by which the film is changed, M, the spring, which enables one to detect when the film is in register, N the level, P the indicator, and R the receiver for exposed films. Fig. 2 gives a front view of the camera. A is the sliding shutter to close lens aperture, B the number giving the speed at which the shutter is set, C the diaphragm plate, D the U.S. number of diaphragm, E the shutter winder, F the diaphragm handle, GG finder holes.

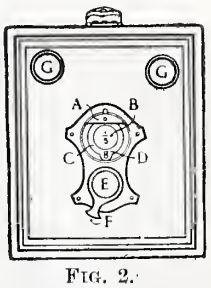
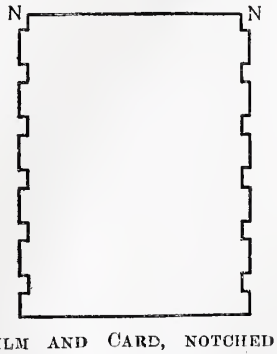


FIG. 2.

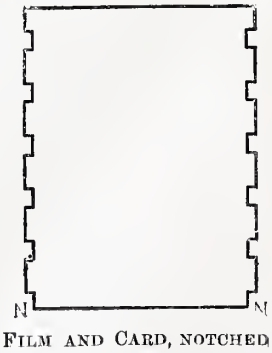
The lens of the new Frena is a Beck Autograph R,R., of 5½ in. focus, with diaphragms of *f*/8, *f*/11, *f*/16, *f*/22, and *f*/64. The shutter is of the sector type, working in the diaphragm slot, and will give accurate exposures from $\frac{1}{5}$th to $\frac{1}{80}$th sec. The numbers showing the speed of shutter and, stop apertures are read through the lens, and are easily altered. The focus is fixed, so that all the objects from 20 ft. to infinity are in focus, but by an ingenious arrangement of supplementary lenses which can be instantly affixed in front, objects as near as 3½ ft. can be photographed sharp. The addition of stops renders the swing-back in this camera much more useful, as with the smallest stop this can be used at an angle of 25 deg.

The shutter is released for instantaneous work by pressure on the side knob, whilst for some exposures this is pulled out, and the shutter remains open till the knob is pressed in again. The variation of speed is obtained by alteration of the size of the aperture passing across the lens, not upon increased or decreased tension power. The finders are constructed upon a new design. As is well known, most finders have a mirror set at an angle of 45 deg. below the ground glass, but in this camera the mirror is behind the ground glass, so that the image is very plainly seen. The camera is provided with two sockets and a screw, so that it may be used on a stand for time exposures.

The method of changing the film is somewhat different to that



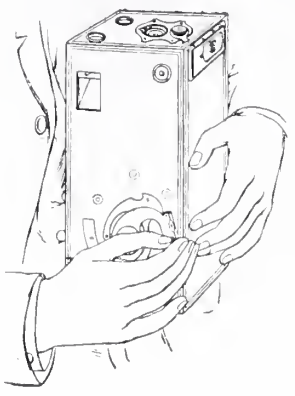
FILM AND CARD, NOTCHED CORNERS AT TOP.



FILM AND CARD, NOTCHED CORNERS AT BOTTOM.

in the earlier camera, the films and cards for which were alternately notched. In this they are all cut to one identical shape, and the alternation of notches is obtained by packing the consecutive films in opposite directions, as shown in diagram.

This method of cutting all films and cards of the same shape gives the advantages that the film and card can be cut together as if they were one, and when a backed film is placed on the market, a larger number of films can be carried, and further the mechanism of the camera is much simpler.



To change the films the camera is held with the lens pointing up, and the handle is turned round half a circle, and the film drops into the receiver.

We have not yet had an opportunity of trying the camera outdoors, but having carefully examined it, we have no hesitation in saying it will find far greater favour than the No. 1, on account of the increase in size and greater aptitude for work.

The price of the camera loaded is £8 17s. 6d., with 10s. 6d. extra for the magnifiers. The films vary in price from 3s. 9d. to 4s. 6d. per packet of 20.

The Bristol Exhibition.

(*Continued from p.* 414.)

IN the Portraiture, Figure Study, and Genre Class Warneuke is represented by "At the Well" and "A Conquest," both of which have been shown before and are pretty well known, the latter always striking us as commonplace in treatment. Count von Gloeden sends some nude studies.

D. J. Protheroe is represented by a frame of six fine studies in platinum, and R. Frost has a capital enlargement of a child, entitled "Bed-time." It is soft and without excessively black shadows. Broughton and Son have also two good studies. Walter Norgrove has also some sound work, which proves his capabilities in more branches than one of photography. R. H. Lord's "Good News" is also here. A frame of six theatrical scenes by a local photographer: J. Broomhead takes a bronze medal, and we must confess to have rarely seen such good work done by this light. W. J. Byrne is represented by several frames of child portraits, and J. H. Coath by two frames; one "The Young Dentist," and the other, "Where are you going, my pretty maid?" E. H. Hazell has three good studies. 352 and 353 by N. Tarasoff, whilst not strikingly artistic, will attract attention from their novelty, representing as they do "Moose Hunting."

Miss Farnsworth is also represented in this class, and takes the silver medal for 355.

> "Where'er you go, where'er you pass,
> There comes a gladness on the grass,"

which represents a young lady, in somewhat strained attitude, with a lyre in her hands. It is a good outdoor portrait study, but the pose is somewhat strained.

E. Brightman has a well-executed study in 356. Sutcliffe's "Life in a Court," 358, takes the bronze medal, and is full of that life and go which is so characteristic of his work. Mendelssohn is represented by the same frame of four silver prints that were shown at Pall Mall. Ernest Lambert has four frames of large heads of very fine character. 371, "Dolce far Niente," another of Sutcliffe's figure studies, and 372, by the same hand, is a single figure of a fisher lass. Wm. Schooling shows some good class work, whilst just below is Lewis Cohen's exquisite study, "The Bivouac." 380, "Never too late to Mend," by E. Brightman, is perfect in its rendering. The old shoemaker examining the boy's split boot is capital, and the rendering of 391, "On the Alert," by W. P. Marsh, represents four little fluffy kittens and an old straw hat, and the expressions on these kittens is good. 400 is a good study, by Treble, of two boys one end of a rope, and a fox terrier pulling hard at the other. 405, by T. Butler, is a nude study of a child, so much like those sent into one of our recent competitions, by Hall Edwards, that we took it to be by this worker. 404, by the same worker, is a natural little child study of a small boy holding a cat, which is lapping from a saucer of milk held by a little girl. 408 and 409, by W. Crofton Hemmons, "Agricultural Studies," are decidedly good. Shapoor N. Bhedwar's "Nadar Invocation" pictures will at once attract the attention, as well as the fine series of portraits by him. 413, "The Village Corn Doctor," by F. S. Seed, is natural and homely, though recalling an old picture by a well-known worker. W. W. Winter is represented by some very fine studies, and W. M. Warneuke takes a silver medal for a capital study of a child. C. F. Treble has some good baby studies, and Prince Barma is also represented by the same pictures as shown at the Stanley Show. W. J. Byrne has some of his red chalk carbon studies. 446, by Crofton Hemmons, is again two agricultural studies, which are very happy, particularly the ploughing scene. With 459, Harold Baker takes a silver medal for six half-plate portrait studies, most exquisite in treatment and style, full of delicacy and softness; a companion frame, less happy in the models, being 463. The same worker also secures a bronze medal for another frame of twelve portrait studies in platinotype of almost equal merit to the others. A bronze medal goes to Fred Hollyer for his now well-known studies of the Rev. Stopford Brooke and Mr. Davis. Shapoor N. Bhedwar is also credited with three large prints of work so characteristic of him. D. J. Scott has a pretty little child study, though the child's shirt is over-clean and white; whilst low down in 501, N. D. F. Pearce has a pretty little natural thing. In the bay leading from the portrait room on the left-hand side are two noticeable prints—510, "A Winter Effect," by S. G. Payne, and 513, "Landing the Trout," by the Rev. H. B. Hare.

In the Instantaneous Class the first noticeable print is 519, by E. Hawkins, which one might almost call a bold effect at colour by photography, a gloomy, warm Thames view with a brighter sky. The same worker takes the bronze medal for "Toby and Jack," a capital dog study. In the small instantaneous, J. M. C. Grove has a frame full of Thames studies, which are, we venture to think, untrue in tone. Mr. Percy Lewis takes the silver medal here for 528, a frame of charming platinotype studies. C. Knight's circus studies are here; Kidson Taylor's exquisitely luminous little studies; W. Thomas, Chas. Job, and Grey all have good examples.

The Botanical Class is not a very heavy one, but there are some really fine examples of still life. The bronze medal goes to a frame of three platinotypes by J. T. Hopwood. R. Frost has some fine studies too, and his grapes are particularly noticeable. Mr. Kidson Taylor, who shows in this class, is not quite so happy, there being a slight tendency to hardness in some of his whites.

In the Architectural Class, a local worker, W. Crofton Hemmons, carries off the bronze medal for 581, a set of three fine prints. 567, by the Rev. Precentor Mann, is pleasing, whilst as an example of pure architectural value is J. E. C. Warhury's 579, "Orie-Window, Nuremberg." Harold Baker sends a frame of fine studies, and F. W. Edwards is represented by "The Western Towers, Westminster." In the Interiors Class there is some very good work—H. E. Farmer, "Across the Octagon, Ely;" "Southwell Cathedral," by A. J. Lowton; 611, A frame of good local bits, by W. Crofton Hemmons. Again the silver medal is won by H. W. Bennett, for "The Choir, St. Paul's," an exquisite treatment of this place. F. W. Edwards is also represented by some more of his Westminster views; but the bronze medal is won by S. G. Payne, for three prints of a very fine series, another bronze medal being won by Harold Baker for 673 and 675, two exquisite bits again. It is impossible to pick out all the good work in this class; there is hardly a print that can be spared, and certainly not half a dozen that are of second-rate mediocrity.

In the Micrographical Class W. I. Chadwick takes the silver medal for thirty-five magnificent prints. In the Zoological, Harry Sandland takes the silver for 730, a frame of four Zoo studies, with the playful tiger which will be remembered as shown at Pall Mall. Chas. Reid, of Wishaw, is also represented in this class with some of his exquisite highland cattle and sheep studies. Another frame that will please many is 739, "A Fishy Transaction," by T. B. Sutton, which represents a cat fetching a fish out of a fisherman's basket, in four scenes. It is well carried out, natural, and appeals to the risible side of one's nature. Sutcliffe is also represented by two little bits, one of which is hardly an animal study.

The work shown as part of the "Photographic Survey of the Bristol District" is not only good in technique, but, so far as the exigencies of the subject would allow, artistic treatment has been attempted with many. W. Crofton Hemmons takes the bronze medal, and Mr. E. Brightman the silver. The number of exhibitors is not many, but the works are numerous and good.

For marine subjects Bernard Lintott takes the silver medal for "On the Top of the Tide," a beautifully soft enlargement of a barge in the Pool, with the Tower Bridge in the distance. F. M. Sutcliffe takes the bronze for 796, "Whitby Harbour." This is a very rich class. West and Son's yacht studies will at once attract attention, and A. Debenham runs alongside with some good yacht pictures also. Mr. Worsley Benison has some capital prints, and other noticeable work is by Brownrigg, Hemmons, etc. E. C. Fincham rather spoils his good study "In Irish Waters" by a silver frame, which kills the print and others near it.

The Enlargement Class is not strong. Harry Sandland takes the silver medal for one of his Zoo. studies, and the bronze goes to W. A. Cadby for "Reflections," the most pleasing specimen we have yet seen of this exhibitor's work. Another capital thing is 857, "Caught Napping," by H. Oswald Isaac.

In the Transparencies Class Mr. E. Brightman takes the silver

medal for a very fine set of 11 by 9, which contains some exquisitely soft work. The lantern slides sent in are, taking them on the whole, of a very high character. J. M. Brownrigg takes the silver medal for some very fine studies with sky effects, and Geo. Hankins takes the bronze. Dr. T. H. Morton sends in a set of medical and pathological studies, which are wisely removed from public exhibition For stereoscopic transparencies J. H. Spencer takes the silver medal, and we are glad to see such a lot of good work in this class.

The judges' pictures—"not for competition," we need not say—are not the least worthy of the pictures shown. Mr. Payne Jennings sends in some of his lovely pictures, and is backed up well by Mr. S. P. Jackson, not only with lantern slides, but a large number of exquisite little hand-camera shots. Mr. H. A. Hood Daniel, the President of the society, has a capital set of pictures too.

The loan collection of prints includes some very fine carbon enlargements by Elliott and Son, of Barnet, who are also represented in the other rooms by their monster wave study and polychromatic carbon print. R. and J. Beck send a frame of Frenagraphs and enlargements from Frena negatives. Early photographic work is shown in the shape of an album of prints, made by Fox Talbot and other early workers.

H. Husbands and Sons, and M. W. Dunscombe, both local dealers, make a very good show of apparatus, and amongst the latter's exhibit the new "Lysaght" hand-camera, designed by the well-known and successful hand-camerist, Mayor Lysaght, late of Dublin. This we shall notice shortly in detail.

Photography as an Educational Agent.

By W. A. Watts, M.A.

(*Continued from page* 420.)

It will be understood, therefore, that what the writer desires to advocate is the employment of photography in schools as a subject of tuition, in the same manner as French, or classics, or mathematics are taught. This may seem a somewhat startling proposition, and its advantages, at first sight, not obviously apparent, yet a little consideration may possibly put the matter in a different light, and the writer is not without hopes that when a little attention has been directed to the subject, experienced teachers may be induced to yield their assent.

In the present transitional state of educational matters it is indeed somewhat difficult to say which subjects are of most vital importance, as there are two schools of educationalists taking opposing views, and whilst classics have to some extent been deposed from their former position of unquestioned supremacy, one may almost say *monopoly*, it is by no means universally decided what subjects are to take their place. New subjects constantly assert their claim to a place in the educational scheme, and whilst it is physically impossible to include all, the battle of the survival of the fittest is not yet fought out. Whatever may be the ultimate result of the struggle for existence, in which it seems inevitable that some studies one would be anxious to include must go to the wall, it is almost certain that photography, although the youngest and apparently weakest claimant, will not be one of them, at all events if an enlightened view be taken of their relative merits. In order adequately to estimate the relative importance of the subjects which contend for a place in a national scheme of education, it may be necessary to consider somewhat the ultimate destination of the scholar. From this point of view there is a tendency of schools to divide themselves into two classes, and probably the present transitional state of matters will finally resolve itself into a more permanent and pronounced division between these two classes; one, namely, which is disposed to arrogate to itself a higher title and position in which boys are prepared for the various professions, the army, the church, the legal and medical professions, in which at present the study of languages is the principal object, with so much mathematics and natural science as the progress of public opinion has forced upon them. In these schools, although the high importance attached to the dead languages has been somewhat weakened, and the exigencies of the various professions have compelled the introduction of more modern subjects, it is by no means finally settled to what extent these subjects, nor even *what* subjects, are to take their place; as a branch of Natural Science, however, few subjects have better claims than photography, whether looked upon as mental training, or as a qualification for professional life. The second class of schools are those in which the main object is to prepare for commercial life, and in which, the dead languages being eliminated, much more time is left to devote to practical training, but in which the time otherwise devoted to classics is more than exhausted by French, geography, writing, shorthand, book-keeping, commercial arithmetic, drawing, and other subjects which in days no longer ago than those of our fathers were never heard of, but which now a days cannot be omitted in any well-planned scheme of commercial education. Can photography fairly and successfully claim a place amongst this multitudinous crowd of competitors? To prove that the answer to this problem is distinctly and decidedly in the affirmative is the object of the present article.

Before we can rightly determine the relative value and importance of educational subjects, it is desirable to formulate our ideas on the reasons why any subject is important, and as to what are the qualities which regulate its value. On this point there are, as was indicated above, two opposing schools, each of which has claims to consideration, and the influence of each of which is felt to some extent in our present curricula, which all partake somewhat of the nature of a compromise. We have, on the one hand, those educationalists whose views have chiefly prevailed in our older schools, and in those of the first-class more especially—viz., those who maintain that the true object of education is mental training, and that those subjects are of primary importance which give the most effectual training to the mind; on the other hand, we have a school which estimates every subject in relation to its value in the practical work of after-life. These latter views chiefly prevail in the second class of schools and particularly in the Board schools.

If we look at subjects in regard to their value as mental training, it is only because of their efficiency in training the pupil in the full and accurate use of language and in precision of expression that Latin, and, to some extent, Greek, retain their great importance in our higher school; whilst mathematics train the reasoning faculties, and natural science has successfully pressed its claim to a place in the scheme, although in the face of much opposition, because of its superior powers in training the faculties of observation and inductive reasoning. Natural science, however, is of no value from this point of view, unless the pupil makes and records *his own* observation and performs his own experiments; hence the universal preference for chemistry and botany as the particular branches to be selected, inasmuch as in these the objects of observation are most easily obtained, and the experiments most easily performed. But here photography shows its value: it both trains the power of observation and affords a series of interesting experiments; in fact, it illustrates and enforces the principles both of chemistry and physics. Chemistry, as a subject of tuition, possesses many undeniable merits, it is the essential introduction to many sciences, and it admits of a well-defined and regulated series of experiments which the boys can perform, each for himself; it has, withal, some drawbacks, it is expensive to initiate, requiring a number of sets of very fragile apparatus and a carefully fitted laboratory, involving a large amount of room for comparatively a small number of pupils; the experiments are messy and not without danger in inexperienced hands, requiring a large amount of (necessarily expensive) supervision; and finally, as usually taught, it is not particularly interesting, except to those who have a taste for it. Photography, on the other hand, has most of the advantages, without the drawbacks, of chemistry; it does not require an expensive set of apparatus to initiate it, the experiments are comparatively simple, and may readily be carried out in an unpretending manner, it cultivates the artistic feelings and the love of nature, as well as the observing and inductive faculties, whilst the power of possessing and showing the resulting work, even when its intrinsic value is comparatively trifling, lends it great and permanent interest. Besides these advantages it may be used in those schools where chemistry is already a principal and important subject, to add to the interest and value of that study, as the boys who practise photography will naturally take more interest in the chemical principles of development, printing, fixing, etc. What has been said here, though bearing, primarily, on boys' schools, applies, *mutatis mutandis*, to girls' schools; in these the artistic aspects of

This descriptive power of contrast may be shown in various ways! photography will probably meet with better appreciation, and the objections to chemistry perhaps will be felt to have even greater force.

Let us now see how photography stands in relation to that school of educationalists who look at every subject in its practical aspect, who will admit, on the one hand, no subject which is not likely to be used in the practical business of every-day life, and, on the other hand, insist upon including a number of subjects which *may* be so used, but which are far too many to be all taught effectively within a limited period, and which cannot by any possibility be all used by the *same* boy.

It is the prevalence of these views which has banished from a certain class of schools Latin and Greek, and caused grammar and history to be looked on with suspicion, which has made French the only language to be taught, because the boy may *possibly* go to France, or be engaged as clerk in an office where he may need to write French correspondence; has attached an importance to shorthand, book-keeping, writing, and drawing which, relatively, perhaps they hardly deserve, useful as under many circumstances they may become; and which even deems it feasible to overload the already crowded curriculum with typewriting, carpentry (why not plumbing and brickmaking?), and political economy. If this theory of education

is to be carried to its logical conclusion, it will be necessary ultimately to adopt a much more complete system of differentiation in our educational institutions, and to have schools, or at all events divisions of schools, specially to prepare one set of boys for office life, another for service behind the counter, and again others as carpenters, plumbers, bricklayers, or whatever other handicraft they may propose to adopt. The writer's view on these opposing systems of education has, perhaps, already been sufficiently indicated; but to state it explicitly, it is that the true theory of education is to lay a sound foundation, in the first place, by teaching those subjects which best train the mind, and when the intellectual faculties are strengthened, to complete the edifice by teaching such practical subjects as are most likely to be required in the particular walk of life the boy proposes to adopt, by means of technical schools.

In any scheme of practical education, however, chemistry must necessarily find a place, as it lies so much at the basis of nearly all handicrafts and manufactures, and is the necessary introduction to so many other sciences that whatever else is, by stress of time, omitted, it cannot be; it is increasingly necessary in almost every walk of life; and even in the Professions, whilst it is, of course, indispensable to the physician, the pharmaceutist, and the engineer, whether civil or electrical; it has its value also to the lawyer (who frequently has to deal with chemical interests), the military man, and even the clergyman. Photography, if duly appreciated, comes in a good second, for, although the youngest of the sciences, it has found applications in almost every walk of life.

Space would fail to enumerate all the practical occupations in which the knowledge of photography will be found useful, and as every year extends the list, it is hardly necessary to attempt it. A few instances will suffice, and although in these we are only repeating what every photographer knows already, we are not without hopes that this article may be read by some who are not photographers, but who perchance may be induced to become so—for example, the physician finds it of inestimable service in recording the progress of diseases and in delicate investigations into regions of the body, and phenomena otherwise inaccessible; the lawyer finds its evidence more valuable and trustworthy than that of the expert, whilst enabling the latter's conclusions to be more safely formed and more readily presented to the court; that the military man relies extensively on its services is sufficiently evident from the fact that the chief instructor in photography to the Royal Engineers has taken a place as our foremost scientific photographer; the engineer relies upon it to give him accurate information as to the progress of works and the construction of machinery even in distant countries. The Church is almost the only profession which has not hitherto found need of its services, for though it has been proposed to use it in the pulpit, our sermons are not yet enlivened by limelight; still, our clergy are largely a leisured class with opportunities for utilising their holidays which few other professions possess, and the clergyman who, from his travels in the Holy Land or the seats of ancient but now almost forgotten nations, brings back a store of negatives, is able to utilise them in mission-hall or lecture-room on the week-day so as to give his flock much greater interest in his Sunday discourses. But, leaving the professions, let us descend (if descent it be) to trade. The merchant can by photography gain a much more accurate idea of the natural productions in which he deals, and may either be encouraged to invest, or perhaps be timely deterred from investing, his money in foreign regions by means of accurate photographs. In the printing trade photography has almost revolutionised whilst greatly facilating the methods of book and newspaper illustration, and photographic process work is as yet but in its infancy. The decorators and designers of furniture, china, or glassware utilise photography largely in producing their designs; whilst the plumber and sanitary engineer are beginning to avail themselves of its advantages, as is shown by an article in the *Surveyor*, quoted in this month's *Photographic Review of Reviews*.

To recapitulate briefly, the main advantages of photography as a subject of education are the ease with which it can be taught, and the interest it excites, the comparatively inexpensive nature of the apparatus (necessarily) employed, the permanent and valuable nature of the results obtained even by the beginner, the cultivation of the love of nature and the artistic instinct induced by its practice, the healthy and invigorating outdoor exercise it leads to, the training of the eye, mind, and hand simultaneously obtained, and finally the increasing multitude of practical applications in which its use will be appreciated, and the valuable aid it can render in nearly every walk of life. A subject which both trains the mind and is practically useful meets the wants of all classes of educationalists and all ranks of schools, and is worthy of much more general adoption than it has yet met with. Already it is practised to a considerable extent in our public schools, most of which have a successful photographic club, but its use so far is more recreative than educational. It is because it is so well adapted to combine the two that it seems desirable, in however humble a manner, to urge its universal introduction.

The Question of Developers.

A SUGGESTION.

BY W. H. ELLIS.

WE have reached an age when it is no easy matter to decide which is the best developer to use, and the cause of the numerous failures experienced by most workers is due to the choice of a developer which is not altogether suitable for the brand of plates which is being used, and this fault is due to the workers in many instances, for the simple reason that a certain make of plate is purchased and a certain developer has been prepared for those plates which suits the plates very well; but the majority of amateurs fail to get on without trying almost each make of plate, consequently the results are not satisfactory, and the blame is at once put on the plates which, in some cases, has to be borne by the makers. I need not go any further into this question; what I have written will set forth clearly what the majority of failures are due to.

Few workers understand the process of making or coating of plates, and further, it is little thought that no two makes of plates are alike in all respects, consequently they fail to see why one developer should not serve for all makes of plates. With those amateurs who are constantly exhibiting this has no bearing, for many reasons. First, they, as a rule, only use one make of plates; secondly, they use only one developer; and, thirdly, if they should have more than one make of plates, they have equal number of developers, and so it is those who follow this rule succeed in this work of art. But, again, why is it amateur photographers cannot content themselves with one make of plates and one developer? My opinion on this point is that it is a general mania to try as many makes as possible to see the results, and in so doing get mixed as to which developer was used when a good negative is obtained. But leaving this discussion, the next question is, which is the best developer now used? I must confess that I am not able to give an answer, but, perhaps, by a little consideration on a few of the chief points considered by the majority of well-known workers, we may get an answer, although indirect, sufficiently clear to enable the reader to see what I am aiming at. It can be well understood, and is fairly well known, that the process of development is the chief step in connection with photography, and without such it would be impossible to proceed further than to expose the plate. So, as might only be expected, numerous developers have been given to the photographers, put on the market, advertised, and used by a number of workers, and the majority of them have only power enough to bring out a faint resemblance of the real picture which is on the exposed plate, and consequently many a good and, in many cases, valuable negative has been destroyed. If it could be reckoned, the number of such developers would surprise not a few. But the blame cannot reasonably be put wholly on the worker, but on those who publish the formulæ for such developers, and not only publish them but give them a good testimonial when the developers have not, in many cases, been tried, and so lead the readers to try some, and if bad results are obtained, the blame is at once put on the plate. And I am sure, were all the so-called developers now afloat put to a severe test, 90 per cent. would be found of no use whatever, and the remaining 10 per cent. might be passed as likely to do any successful work. So it can only be expected that the numerous failures are due to the cause explained. Then, again, there is the question which has never been answered, as to which developer is the most suitable for all-round work. Now although it cannot be stated that working on the all-round system is advisable, there really ought to be a developer which to a certain extent can be used for that purpose. Seeing there are several points of view from which this question can be viewed, I fail to see how it is possible to arrive at a definite decision. But looking from the financial point of view, that point which is very important to not a few workers, I must say these workers have been, and are, looking forward to that day when it can be decided by some well-known worker which is the best and most suitable developer for all-round work, which will save them in some cases a considerable amount of cash, which might reasonably be spent on plates for fresh subjects. And again, our readers do not seem awake to the fact that day by day there are numbers of people who are taking up this work, and that there are still greater numbers who fail to get results to satisfy themselves, and if one or two workers do happen to mount a print of their own taking, and perchance it should come before the eyes of an experienced worker, the print is knocked down, pulled to pieces, and no hints given how to improve on further work. Such is, in my opinion and experience, the manner in which numerous beginners are treated. This is selfishness on the part of the experienced worker, and in many cases the prints are as good in some points as it is possible for them to be, but they are put down as nought by the workers mentioned.

Precisely similar is the work amongst beginners on the question

of developer, as well as every branch in connection with this work of art. Having given a general outline of the state of affairs at this present day, I venture to make a suggestion which I feel sure will be acknowledged of service to every photographer; it is in the form of question, and if put in as clear a form as possible it would read: (1) Ought not all photographic societies and clubs in the United Kingdom, each to decide upon a standard developer, which they find most suitable for all-round work? (2) Ought not each of these developers to be brought before a committee who will decide definitely the standard developer most suitable and likely to be of most service for all-round work? (3) And ought not this to be done once a year, in case of any suggestion which any club may deem likely to improve the developer, and which will be considered by a committee?

Each of the given questions is not difficult to settle upon, and beginning with first, perhaps it might be more fully understood if a little explanation were given, which necessitates, of course, careful consideration. It will be clearly understood that each club or society is to decide upon one developer, which, by all the members' sanction and opinion, is the most likely to be of service for all or very nearly every branch of this work, but the last few words mean a lot, and there should be some limit to the question at this point. Of course, it is possible to view the question from several points of view; but I venture to say if viewed from the point of subject and plate, it will be more limited in its meaning, As regards the subject, this, of course, would mean fairly well each of the "common" subjects, such as landscape, seascape, portraiture, architecture interior and exterior, but no instantaneous work. Excepting instantaneous work, the subjects named include all those which every photographer treats with during his or her photographic career, and in many cases amateurs do not go any further up the tree, and they think if they limit their work to the named subjects there ought to be something in the form of a standard developer with which amateurs can rely on getting good or satisfactory results. Of course, it is readily known that each subject requires a separate developer, and in some cases separate printing processes and plates, in order to produce a print of the highest quality; but as the subjects named are the average photographer's limits, I think it is only fair that for such, a reliable, lasting, and useful developer, a developer which can be varied in its strength either ways, should be found. All instantaneous subjects as a rule require a separate developer capable of bringing out the image which is thrown on the plate in as small a space of time as it is possible therefore it is not likely that a developer capable of carrying out all the given work, together with instantaneous work, is likely to be found, unless something very striking is introduced by our Atlantic cousins. But I think it can be safely said that it is impossible for any developer to carry out such a wide angle of work, so I venture to suggest the limit put will be found beneficial to all. Now to view the subject from the plate point of view. To begin with, it would be impossible to limit it to one make of plate, and, again, to one rapidity of plates, so that two important points are so far settled, but it is well known no two makes of plates are alike in all respects, neither are the rapidities of two makes alike, so the most difficult point which has to be considered is which plates are more alike and which rapidities are most alike. But again, it would be ruinous to the trade to state certain makes of plates, therefore the work of each club must be to try each make of plate and get a developer to suit all makes of plates, and I believe this will not take much trouble, as the plates of the day, although, as before stated, not alike in all respects, are almost alike, and so perfection in some cases. As regards the rapidities of the plates, it is possible to limit this to rapid and leave the extra rapid plates alone for use only with instantaneous work. So here we have also limited our plates to such as are of the same rapidity as those termed ordinary and rapid, therefore these two views of the question of "all-round work," I venture to suggest, it has set forth clearly the full meaning of the sentence. But going further on, we come to the second question, which really explains itself, although it does not state what the work of the Committee is to be, except that they have sent them formulæ and few particulars of all the developers which the clubs think are likely to be most suitable for all-round work, and the task which is set for the Committee is to fully consider which developer out of the numbers which they receive, is the best suitable for all-round work, which must be fully tested, tried, and detailed as to permanency and acting power, and whichever developer is chosen must be the standard all-round developer for photographers, the limits to which have already been given, and will be set forth in the particulars which will be published with the chosen formula. Such is the clearest form in which I can give the full meaning of the second question; but before leaving this altogether I venture to make one or two suggestions as to the developer which is now used most, and which to my mind seems most likely to be chosen. I need scarcely mention the pyro developer, a developer which, in fact, has seen better days, and I am of opinion that the real pyro developer of two or three years ago was and is far superior to that of the present day, which some makers seem to think is better than ever it was, but it is a great pity that all and each of the little experiments which are made by numerous workers are all taken as good, and without really a fair trial the developer is used with very little success. But as regards the pyro developer itself I might add that it is not of such valuable service as other developers, although it does its work exceedingly well, and has been stated to be a developer which it is impossible to beat; whether or not this is correct I cannot say, but by the general run of the matters now it appears that it is not correct, inasmuch that the developer known as quinol or hydroquinone is used more than any other, and it is the only developer which can be used for almost every subject. I must state with perfect knowledge after over four years' experience with the hydroquinone developer that it is the best for amateurs or rather young and inexperienced workers, and this is not stated without ample foundation, the principal of which are (1) that the developer is slow in its action, but sure with its results; (2) with under or over exposed plates this developer is treated in a most simple manner, which certainly increases the chance of success with almost every plate; (3) it does not stain either the fingers or more especially the plate, as does the pyro and most others, no matter how long the plate may remain in the developer. Now, these three advantages—and very valuable advantages—cannot be claimed by any developer, I know, but further, the hydroquinone developer will develop all kinds of plates, and plates which have been exposed on almost any subject; it will develop all bromide paper, lantern plates, film, etc.; therefore I might in concluding my remarks upon this subject, say whatever developer is chosen, the hydroquinone developer should be well tested and tried before any one is decided upon. There are other developers, as ferrous oxalate, having several formulæ, and each of which is used a great lot, and I doubt whether there are many amateurs who use the same developer in all respects. Of late there have been several new developers introduced which, in the opinion of the photographic press, are very serviceable. The principal of these developers is Amidol, but it remains to be finally stated how far this developer will work, and with what quality results. It is well known and is seriously thought by not a few that this developer is not to be beaten for bromide paper and lantern photo work, it having no staining power whatever; so that this developer should be well considered, but not so as to do any harm to the inventors, who are having a very large sale for this developer. But as the subject of developers is so undecided, I must leave all minor questions to be decided by the workers, and those who, I hope, will have anything to do with settling this important question.

Returning again to the suggestion, the law of which has to be further explained, inasmuch as photography is taking such strides and further experiments are being made nearly every day, it will be a chance for the experimentalists to forward their proposals to the committee for their full consideration. As regards the time of discussion for fresh suggestions, I think a year is quite enough. The end of each year would be most convenient, and by so doing we should have the latest formulæ published in those annuals which are issued at the beginning of each year. Thus I have ventured to show the photographers of to-day how it is possible to obtain a satisfactory developer, and I hope, by the aid of all who sympathise with this work, we may be able to get a decided answer to the questions given before long.

But yet another point on the question of developers is the one-solution developer. This question has, perhaps, been questioned and argued more than any other, and still each worker has his own way. To some this article may be of very little service, but let it be understood that the principal aim to which I am writing is financially, and with this point many fail to agree, but as photography is practised by the thousands now, many of whom have never seen anybody else's work, and they very seldom get a hint, and then they have to pay dearly for it, I venture to think there ought to be something done by which this hobby can be made lighter, both financially and in parcel. The question of a one-solution developer may seem to some as precisely similiar to that for a standard developer, but the one differs from the other in that a standard developer in reality cannot be a one-solution developer, seeing the lines which the standard has to cover, and, again, the one-solution developer cannot be the same as the standard developer, because when a one-solution developer is asked for it cannot be meant to be used for almost every subject as the standard developer is, because a one-solution developer cannot be shortened (or weakened) as a standard developer can, or it would not be a one-solution developer, as no developer gives results anything like in comparison with each other which are developed with a one-solution developer, as a standard developer does or would do, as it must be distinctly understood that no developer must or rather can be decided upon as a suitable standard developer which is only a one-solution developer. The one-solution developers are used a great lot by tourists, for the

sake of having as little as possible to carry, and to these workers as well as others, whose income will not permit of more expensive process, a developer which can be relied upon would be greatly appreciated. Thus, by this article, I have put forward two of the most important points in connection with photography, which I hope will be attended to by all interested. If photographers would only use one or two developers, or adopt the method put forward in the beginning of this article, instead of trying pretty well every developer as they come out and never settling on one or two, as the extent of their practice and the several special subjects required, it would not only save plates and expense, but would show the advantage obtained by the increase of good work exhibited at the photographic exhibitions.

The Fountain Air Brush.

MR. C. L. BURDICK, of Chicago and Memorial Hall, Ludgate Circus, E.C., gave a demonstration of the use of the above instrument, which is constructed to totally replace the brush for working up enlargements, etc., either in water or oil colours, or it may be used to lay the ground for photogravure plates, for applying colour to porcelain, which can afterwards be fired.

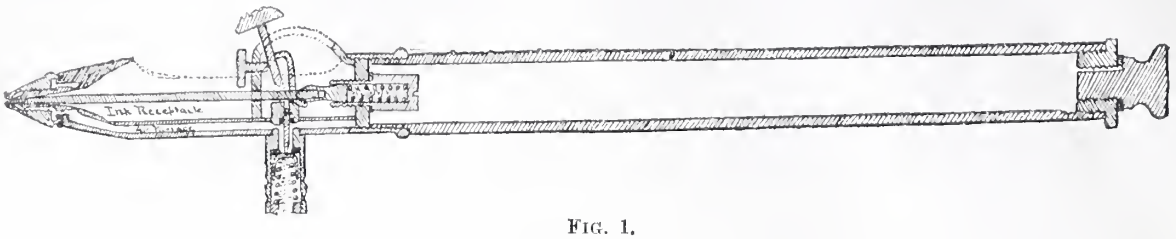


FIG. 1.



The air brush is very simple in construction, and is not much larger than an ordinary pencil, and is held in exactly the same way. A foot pump is used to force the air into a reservoir, whence it is admitted to the brush at the will of the artist. The air brush is

shown in fig. 1. R is the open receptacle for the colour, and ends in a point inside the cap C, as shown by the dotted lines. H is the handle or reservoir for holding a supply of colour, and can be detached at D. I is a thumb screw which will allow the colour to pass through into the open receptacle. A is the connection for the air pump, and contains a valve which is operated by pressure on the circular button B. P is a pointed rod which passes forward to plug a small opening at the top of the brush, and this is moved backward by pressure on B, so as to allow more or less colour to pass. For line work S is used to regulate the amount of colour, The action is very simple, the air entering by A, passes under R, and on at C, and thence draws the liquid colour, and distributes it either in close or wide spray. Almost any colours may be used, either in water or oil, freedom from coarse or gritty particles being obviously a *sine qua non*.

By the kind permission of Mr. Burdick, we are enabled to give two reproductions of work done by this brush. The single head is from a fired porcelain plaque, copied the same size, whilst the two heads are reduced to one-third in size, and the original was made in our presence without any basis or preparation, that is sketched in directly with the air brush in forty minutes. Mr. Burdick is giving free demonstrations at the office of the *Photogram*, Memorial Hall, from 27th inst. to January 5th, and it is well worth seeing in operation.

Certificate for Thiocarbamid=Hauff.

On the 10th October, 1892, Mr. J. Hauff, of Feuerbach, Stuttgart, submitted to me a sample of Thiocarbamid with the request to test same and report thereon in regard to the application of same in photography.

According to this statement of Mr. Hauff, Thiocarbamid should possess the property (when added to the fixing bath) to prevent bromide silver gelatine plates, as well as chloride silver gelatine plates and bromide silver gelatine papers, from colouring the gelatine layer yellow, and should prevent the formation of a so-called green fog.

The preparation sent consisted of some white crystals and gave in water a colourless liquid. I found that it acts indeed (in acid solutions) as a preventive against yellowish negatives.

I made a solution of—

Thiocarbamid	10 parts
Citric acid or sulphuric acid	10 „
Water...	1,000 „

I immersed in this solution a pyro negative strongly coloured with green fog, and after a short time the yellowish-green colour had disappeared. With amidol I was not able to obtain negatives showing green fog, and therefore could not make a trial. If the salt is added to the fixing bath it prevents the formation of green fog with plates and bromide silver paper; but it must be observed that the bath should be *acid*.

For fixing I found the following formula very useful—

Water	1,000 cubic cm.
Fixing soda	200 grammes.
Thiocarbamid	10-15 „

To this solution is added fifty grammes of bisulphate of soda.

I would observe that plates as well as papers before fixing must be washed sufficiently so as to remove all traces of the developer.

As the action of Thiocarbamid in the fixing bath is only of proportionately short duration, it is recommended to use an ordinary acid fixing bath, which, as is known, will by itself prevent to a certain extent the formation of green fog; and after the use of this, if necessary, the above discolouring bath can be applied, and which will become necessary, especially for certain kinds of bromide silver gelatine paper. I can certify therefore that for this purpose the said salt, Thiocarbamid, proves a good, useful means of removing discolouration. (Dr.) J. M. Eder

(Director of the K. K. Lehr-u. Versuchsanstalt fur Photographie und reproductionsverfahren in Wien).

Vienna, December 3rd, 1893.

Herefordshire.—An open lantern evening was held on 19th inst. Some prize slides were thrown on the screen by Mr. E. Horth, who skilfully manipulated his splendid lantern. Some of the sets were of exceptionally fine quality, and were admired by the members present, the local prize winners, the Rev. G. H. Morgan and Mr. A. Watkins' sets receiving loud applause. Mr. Phillips exhibited a fine set of slides of the moon, taken through a telescope of his own manufacture. Mr. A. Watkins also showed a slide of Cheyne Court, the late residence of the now notorious Mr. Monson, from a negative by himself, shortly before it was burnt down.

Mezzotype Paper.*

By J. Bond.

This paper lends itself more readily to certain styles and qualities of negatives. I have found that it is best suited to those with pretty strong contrast, and, as with albumenised paper, one developed by pyro (and that slightly stained) gives the richest result.

The prints should be printed to about the same depth as P.O.P., and it is very necessary to use the right strength of fixing bath. The best is—Hypo, 1 oz.; water, 10 oz.

The fixing of the prints should be carefully attended to, as insufficient fixing leaves them stained and spotty—the formula given above is certain—and I believe it is really more important to fix thoroughly than to wash for a prolonged period, as generally recommended.

But in this respect it must not be lost sight of that the paper is a very absorbent one, and carries out of the fixing bath a relatively large amount of hypo, so that the operation of washing (which should be conducted under a *running* stream of water) will be greatly facilitated if the print is squeegeed at intervals of about a quarter of an hour. The result of imperfect washing is to render the print weak and flat.

The toning of the print, which in this process is the all-important part, may be effected by either of the following baths:—

Platinum Bath.

Chloroplatinite of potassium (previously dissolved in water, 1 grain to 1 drachm)	1 gr.
Water	to 12 oz.

This bath is an excellent one for all tones, from red-brown to black and grey. It should be made some hours before it is used, or it will tone unequally. If the print is withdrawn just as colour commences to change, it will dry a red-brown. A slightly prolonged toning will deepen the colour of the brown. If the print is allowed to remain in the bath until it becomes a good sepia colour it will dry purple. If removed when it reaches a purple it will dry black. If the toning is prolonged beyond this it becomes a warm black. Still further it becomes a pleasant olive grey.

The ordinary sulphocyanide bath if used weak will give very good browns inclining to purple, provided the print is removed whilst still warm in colour. Over-toning with this bath gives an unpleasant cold colour.

The best bath for ordinary photographic tones is the

Borax and Gold Bath.

Borax	½ oz.
Water	12 „
Gold chloride in solution as required.	

But here again the print should be removed whilst still warm in colour. It has been complained that this bath gives a tendency to pinkiness, but I have not observed this to occur. The same authority states that a true sepia colour may be obtained with this paper by first placing it in the ordinary gold and acetate bath for one minute, then rinsing and placing in the platinum bath for one minute. There is no apparent change of tone, or only a very slight one, but when the print is dry it gives the true sepia colour.

With regard to its permanence, I believe it is more likely to be so than the ordinary albumenised paper, mezzotype being so easily saturated with water that all impurities are washed out of it, and you can never be certain of this with albumenised paper, as a great deal depends on the temperature at which it is dried after albumenising as to whether it will readily part with its impurities. The makers of the paper say they use starch as a mountant, but, as before mentioned, this paper is very absorbent, and it therefore takes a large amount to make it adhere to the mount, and the paper being consequently swelled with the damp is apt to cockle the mount, as it shrinks in drying. A good pure mountant of a more sticky nature would be a desideratum.

Woolwich.—On 14th inst. Major C. D. Davies presided. Mr. W. H. Barnes read a paper on "Isochromatic Photography" which proved to be thoroughly interesting and instructive, taking up in turn the advantages of isochromatic plates for copying oil and water colour paintings, for photographing flowers, landscape and portrait work. The paper was pictorially illustrated with a number of photographs taken on ordinary and isochromatic plates with and without the yellow screen, for the purposes of comparison, and further enabled Mr. Barnes to point out clearly when the screen can be usefully employed, and when it is better to rely wholly upon the qualities of the plates. Mr. Barnes concluded by passing a number of slides through the lantern for additional illustration.

* Read before the West Surre Photographic Society.

Recent Patents.

THE following list of recent applications for patents relating to photographic and kindred subjects is compiled for us by Mr. Mellersh-Jackson, patent agent, 75, Chancery Lane, London W.C., from whom further information may be obtained.

No. 23,870. "Improvements in frames for containing and displaying photographs." P. Lund. December 12th, 1393.

No. 23,894. "Method and apparatus for timing photographic development." A. Watkins. December 12th, 1893.

No. 23,976. "Improvements in the manufacture of eye protectors or goggles." W. Vale. December 13th, 1893.

No. 23,988. "Improvements in photographic cameras and apparatus connected therewith." W. R. Baker. December 13th, 1893.

No. 24,030. "Improvements in the construction of frames for astigmatic and other similar eyeglasses." F. Howard and E. S. Pickard. December 14th, 1893.

No. 24,114. "Improvements in photographic apparatus, etc." G. T. Washington. December 15th, 1893.

No. 24,135. "Improvements in and relating to magic lanterns and to the manipulation of the same." H. Simpson. December 15th, 1893.

No. 24,187. "Improvements in connection with projecting lanterns." W. C. Hughes. December 15th, 1893.

The Retention of Cloud Forms in Ordinary Negatives.

BY E. NORDEN.

ON looking over amateurs' landscape and seascape prints, how often does one say, "This would be excellent, were it not for the blank sky." There is no doubt that the sky is the weak point in the ordinary amateur's work. Sometimes this is attempted to be mended by printing from a separate cloud negative; but the remedy is very often worse than the disease. It is no easy matter to find a sky suitable for each 'scape, and frequently one or two skies are made to do duty for an infinitude of subjects. The result in some cases is quite ludicrous, the two portions of the view being perhaps lighted from different directions, or evening clouds combined with a view taken at mid-day. Some may object that it is only novices who make these blunders, but such incongruities are not unknown even on the walls of exhibitions. It is, however, for the novice these notes are put together.

The first thing to attend to is the plate to be used. The writer invariably uses the quickest isochromatic plate obtainable, without a screen. Being isochromatic the blue of the sky is rendered in considerably truer tone than it would be on an uncorrected plate, and being very quick permits a fast instantaneous exposure, for it is almost impossible to obtain a sky showing *printable* clouds with time or even comparatively long exposures. But even with isochromatic plates and quick exposures, unless one uses a suitable developer the clouds will disappear in the blackness of the sky when the plate is developed. To prevent this, a powerful developer, and one that will allow different densities to be obtained at will, is required. The writer uses a mixed quinol and eikonogen developer, the formula for which has often appeared in the photographic journals, and is as follows:—

	A.	
Hydroquinone	40	gr.
Eikonogen	120	„
Soda sulphite	480	„
Citric acid	20	„
Water to	20	oz.
	B.	
Potassium bromide	5	gr.
Soda carbonate (crystals)	60	„
Soda hydrate (stick)	30	„
Water to	20	oz.

For use, the writer mixes an equal quantity of each, and finds that in three or four minutes all detail has appeared, but that the negative is somewhat wanting in density. For bromide printing by gaslight a thin negative will, with care, answer as well as a denser one, and for enlargements with paraffin lamp is even better, but for chloride or platinotype papers greater density is necessary. To obtain this, a second developer, strong in A and very weak in B, is made up, and the negative transferred to it without washing. In this any amount of density can be obtained, and—result aimed at—clouds, if any were present when the plate was exposed, are perfectly rendered. The writer has pursued this method for some time, and has in almost every case succeeded in retaining printable clouds. Sometimes results nearly equal were obtained on ordinary plates, but isochromatic are strongly to be preferred. The plates used were Edwards' isochromatic instantaneous, which, for this purpose, seem as near perfect as can be. The writer does not mean to infer that, in his opinion, Edwards' are the *only* plates that will yield these results. No doubt, in the hands of those amateurs who have had experience of them, other plates—such as the Ilford isochromatic—will give quite as good negatives. Possibly, too, the new developer, Metol, is also suitable, but the writer has not as yet tried it in this way. He is, however, perfectly certain that if these directions are carefully followed, the merest beginner will obtain results he has not hitherto done. Out of five dozen plates exposed in a hand-camera during this autumn—sometimes quite late in the afternoon—in every case where there were clouds in the sky they have come up clear and distinct.

One word of caution to the beginner. By quick exposure is meant not the $\frac{1}{1000}$ part of a second; that would be far too quick with the general run of lenses for ordinary work; but anything between 1-20th and 1-50th second, according to the stop used and on dull days even a longer exposure may be given and clouds still obtained. But on this point no general rule can be given, each exposure must be considered separately.

Societies' Notes.

PHOTOGRAPHIC SOCIETY OF IRELAND have decided to offer the following special medals for open competition amongst amateurs at the forthcoming exhibition of the above society, viz.:—Class A. The society's gold medal for the best set of four landscapes (any size). Class B. The society's silver medal for the best set of two enlargements. Class C. The society's silver medal for the best set of six lantern slides. These exhibits must be the sole work of the exhibitors. Each enlargement must be accompanied by a contact print. Prints must be mounted and framed. The class to which each exhibit belongs, the title and the exhibitor's *nom de plume*, must be written on a label and attached to the back of the picture by cord in such a manner that it can hang over the top in front. The exhibitor's name, enclosed in a sealed envelope, endorsed with the *nom de plume*, and addressed to the Hon. Sec, to be sent with each exhibit. The exhibition will be opened on January 15th, by a full-dress conversazione, and will remain open until January 29th. All exhibits must be delivered at above address on or before Jan. 6th, and carriage paid by exhibitor. John A. C. Ruthven, Hon. Sec., of 35, Dawson Street, Dublin, will send on forms, etc.

THE following are the rules and regulations and schedules of the classes, etc., in the Newcastle International Photographic Exhibition. (1) The charges will be as follows:—Photographic and Photo-Mechanical Pictures: For every 15 square ft. of wall space, or fraction thereof, 2s. 6d. Large exhibitors, who so desire, may have 120 square ft. of continuous wall-space allotted to them on payment of 20s. (or a larger space at a proportional rate), and their pictures will then be hung all together, irrespective of classes. Lantern and Stereoscopic Slides: The charge for these will be 1s. for each class. Foreign Exhibits: These will be admitted without entrance fee. Apparatus Section: Table space will be provided, and the charge will be £2 for a table 9 ft. by 3 ft. (2) All pictures by British exhibitors must be mounted and framed (Oxford frames debarred), labelled on the back with particulars of subject, process, exhibitor's name and address, and, if for sale, price, including frame. Ten per cent. commission will be deducted from the price of all pictures sold. Pictures from abroad may be sent unmounted, and will be suitably mounted by the Executive. (3) No picture which has been previously shown at any exhibition of this association shall be eligible for competition. (4) No picture is eligible for competition in more than one class, and slides for enlargements from negatives, prints from which are shown in another class, are not eligible. (5) No picture which has been medalled at any open exhibition shall be eligible for competition *except in the Champion Classes.* (This does not apply to pictures which have been medalled in society and newspaper competitions.) (6) The committee reserves the right of rejecting any exhibit. (7) All enlargements must be accompanied by a print from the original negative. (8) The judges reserve the power of withholding or increasing the awards in any class. (9) Carriage must be paid both ways by the exhibitor, and the committee will not be held responsible for any accident to, or loss of, exhibits. No picture must be removed before the close of the exhibition. The committee reserves the right to keep open the exhibition a week longer than stated in the prospectus, if desirable. (10) All exhibits

must be addressed "Photographic Exhibition, Art Gallery, Grainger Street, Newcastle-on-Tyne," and must arrive not later than April 4th, 1894, and the attached form (B) must be sent by post as a letter of advice. (11) The attached form (A) must be filled up and sent per post to the Hon. Secs. not later than March 28th, 1894, together with the entrance fee. (12) All correspondence and enquiries must be addressed to the Hon. Secs., Photographic Exhibition, Art Gallery, Grainger Street, Newcastle-on-Tyne. *Open to Professionals and Amateurs.*—Class A, landscapes, silver and bronze medals; B, portraits, silver and bronze medals; C, genre and figure studies, silver and bronze medals; D, architecture, silver and bronze medals; E, instantaneous, silver and bronze medals. N.B.—In accordance with the regulations of the Judges' Conference, awards go to one picture, except in case of a connective series, but it is desirable that exhibitors should send at least three pictures in any of the above classes. Class F, enlargements, silver and bronze medals; G, hand-camera prints (series of six), silver and bronze medals; H, lantern slides (series of six), silver and bronze medals; J, stereoscopic slides on glass (series of six), silver and bronze medals. N.B.—In Classes G, H, and J exhibitors may send more than one series, but each set must be kept separate. *Champion Division* (open only to pictures which have been medalled at an open exhibition).—Class K, landscapes, silver medal; L, portraits, silver medal; M, genre and figure studies, silver medal; N, lantern slides (series of six), silver medal. N.B.—In Class N exhibitors may send more than one series, but each must be kept separate.

Arthur Schwarz and Co., of 9, New Broad Street, E.C., have taken Mr. Hermann Schwarz into partnership, and he will for the future manage the London branch of their business. This firm has been appointed the sole wholesale agent of Hesekiel's platinum paper.

Birmingham.—On 19th inst. Mr. J. T. Mousley in the chair, the series of one-man exhibitions was continued by Mr. Underwood, who had a splendid number of prints on view. They comprised all kinds of subjects, while the interior perhaps showed especial skill, the detail being so clearly defined and no hardness in the shadows. Mr. Uuderwood, who is a splendid hand at the working of gelatino-chloride paper, showed a great variety of good tones, and the exhibition was alike profitable as regards instruction in composition and technique.

Derbyshire Men of Mark.—On 12th inst. the last of a course of four lectures on "Derbyshire Men of Mark" was delivered under the auspices of the Derby University Students' Association. The lecturer was Mr. E. J. Garwood, B.A., who selected for his subject "Captain Abney, and the Progress of Modern Photography." Mr. R. Keene presided, and the lecture was illustrated with the lantern. Amongst those present were Dr. R. W. Gentles, Mr. H. Arnold-Bemrose, Mr. J. Riches, Mr. W. Wilkinson, Mr. T. Hall, Mr. Bennett, Mr. H. Steer, Mr. Willatt, etc. The lecturer, in the course of his remarks, said that Capt. Abney, who was the son of the late Canon Abney, was born at Derby in 1843, at The Firs, Burton Road. He married the daughter of Mr. Smith, of Tickton Hall. His education at school was followed by a course of private tuition under Dr. Griffith, whose brother was a Nonconformist minister at Derby. Capt. Abney was entirely self-taught in the matter of science, and he was very fond of telling his friends that his scientific work was entirely the result of laziness. At the age of 18 he invented the Abney level, and his first paper was written at the age of 17 on "A Theory of Cyclones." At the age of 19 he purchased his first camera, whilst at work on some new forts at Dover, he being in the Royal Engineers. It was whilst in India, however, that he developed a taste for a branch of science which was destined to make him famous. The lecturer then proceeded to enumerate the many improvements which Captain Abney brought about in connection with photography, including the photo-lithographic process. He also referred to the many honours which Capt. Abney has gained, the part he took in astrological photography, and as an instance of his ingenuity said that upon one occasion, in India, he went to photograph some renowned caves. Upon arriving at the spot, however, he found that he had forgotten an important part of his apparatus, whereupon he immediately set to work and made what he required out of the lid of an old sardine tin. As an illustration of the humorous side of Captain Abney's character, the lecturer related an amusing incident which occurred during a *viva voce* examination, limited to time, which he was undergoing. In his answer to the very first question put to him, the captain introduced a vein of argument which kept his examiners disputing with each other until the time for questioning him had expired, and he had to be allowed to pass.

Societies' Meetings.

Croydon (Camera).—On 20th inst. the President, Mr. H. Maclean, in the chair, Mr. John H. Gear gave an address on lantern-slide making by various methods, which, illustrated by many of the lecturer's slides, was received with the greatest satisfaction. The discussion was taken part in by Messrs. Maclean, W. H. Harrison, White Smith, Isaac, and others. Edwards' newly-devised metal dark-slide was shown and explained, and met with considerable approval.

East Grinstead.—On 15th Mr. S. H. Fry, from the Paget Company, gave a very interesting and instructive lecture on "Lantern Slides, and how to Make them." After touching on the methods of obtaining the different shades in slides, and showing through the lantern a set of slides that illustrated very clearly the different shades of colour that can be obtained in a slide, Mr. Fry proceeded to practically demonstrate an exposure and development. Mr. Fry introduced the Paget matt-surface P.O.P. There was on view a number of excellent prints on this paper, which showed the paper to be of a very superior kind, the tone and finish of the prints being most beautiful. Mr. Fry answered many questions put to him by members, and guided them past many of their difficulties.

Hackney.—On 12th inst. Mr. Robert Beckett in the chair, Mr. Grant asked for information regarding the Hill Norris plates. He found that unless you gave exact exposure it was impossible to obtain density. The Chairman also agreed with this remark, and suggested redevelopment as an improvement, as a better result could always be obtained than by developing all at once. The soluble salts could be easily removed from the plates in a very little while. The plates were very easily dried. Mr. Smith asked if isochromatic plates were beneficial for exposures upon winter scenery. Wherever there is a tendency to yellow light these plates were very good. The plates also recommended were those of medium quickness, with a thickly coated emulsion. Mr. Leblanc, of Messrs. A. Schwarz and Co., then proceeded with a demonstration upon Dr. Andresen's developing, fixing, and toning cartridges, and some good results were obtained. They were strongly advocated for tourists, etc., who wished to test their exposures whilst on journey, as they were so easy to manipulate, and saved taking a quantity of chemicals, etc., on tour. An advantage claimed for the fixing cartridge was that it could be used over and over again, and, therefore, a decided advantage over ordinary hypo.

Ipswich and Suffolk.—A conversazione was held 15th inst. A large exhibition of pictures was furnished by the members. The President (Mr. J. Dixon Piper) showed about thirty views, mainly 24 by 20 inches, taken direct; and Mr. Pringle, the late secretary, also contributed some charming landscapes. Altogether nearly 300 frames were hung. A quantity of apparatus was shown. A half-plate camera, with aluminium fittings, by Park, attracted considerable attention, and Messrs. Marion's cameras and stands were also much admired. The European Blair Camera Co. made a good exhibit of hand-cameras. Becks also made a good show of Frenas and work done by them. A new hand-camera, the Nalda, taking eighty cut quarter-plate films, was also on view. Messrs. Houghton, Blackfriars Co., Thornton-Pickard Co., Eastman Co., Elliott, Taylor, Tylar, Cresco-Fylma Co., and many others were represented. Messrs. West and Co. and Wilson and Co. also sent lantern slides, which were projected by Mr. J. C. Wiggin. Music was provided by Mr. C. Cooke and leading local amateurs. The committee furnished refreshments in the interval, and a very pleasant evening was spent. About 200 of the local enthusiasts and their friends, including the Mayor and several members of the Corporation, were present. The Hon. Sec., Mr. A. F. Penraven, 10, S. Matthew's, Ipswich, will be glad to hear from any one wishing to join the society.

Leeds.—A meeting of the newly-elected Committee for the ensuing year was held on 18th inst. for the purpose of electing the officers and settling the syllabus for the year. The officers elected were as follows:—President, Mr. J. H. Walker; Vice-Presidents, Mr. S. A. Warburton and Mr. Godfrey Bingley; Treasurer, Mr. Herbert Denison; Librarian, Mr. T. Butterworth; Lanternist, Mr. H. P. Atkinson; and Secretaries, Mr. Herbert Denison and Mr. H. L. P. London. These gentlemen, together with Mr. B. A. Burrell, F.I.C., Mr. R. Steele, and Dr. E. H. Jacob, M.A., M.D., form the Committee. The society's annual lantern exhibition, which has hitherto been held in November, has been omitted for the present year, but will be held on the 18th January next in the Albert Hall, when a novelty will be introduced in the use of the electric light in the lantern. The syllabus for the coming year comprises many interesting papers and demonstrations on subjects connected with photography.

Lincoln.—On the 20th inst., Mr. Howson (of the Britannia Works Co., Ilford) gave a demonstration of the new Ilford Matt P.O.P. The lecture was practically the same as given before the Central

Photographic Club on the 15th inst., so need not be given in detail here. After describing the paper Mr. Howson at once proceeded to demonstrate the use of it, showing how different tones, ranging from almost a pure black to sepia and brown, could be obtained with the greatest ease. Judging by the specimens exhibited during the evening, the paper leaves nothing to be desired; such exquisitely soft and beautiful pictures surpass anything before attempted. The members of the club are to be congratulated upon being first in the provinces to have this most easy and beautiful process demonstrated before them.

Liverpool (Assoc.)—On 14th inst., under the presidency of Mr. Arnold Cleaver, the annual meeting of this Association was held. An entirely new feature was introduced to the meeting by Mr. H. Simpson (an old member of the Association), consisting of a lecturer's automatic optical lantern, which the lecturer has entirely under his own control, no operator being required. Previous to the exhibition the lecturer places in order all the slides he requires to illustrate his lecture. The lecturer may face his audience, the lantern being placed in the usual position at the back of the hall, and by means of a pneumatic tube connection he dissolves the pictures, changes the slides, and works the limelight. The entire arrangement is altogether unique. After the usual business routine, including the election of twelve new members, the competing pictures, which were arranged round the room, after being much admired, were awarded prizes as follows:—Champion class for past prizemen: The gold medal of the society, Mr. T. F. Lloyd; for half-plate and under, silver medal to J. Appleby, bronze medal to G. Allday; over half-piate, silver medal, C. A. Timmins; bronze, H. Holt; for enlargements, silver medal, William Tomkinson; for hand-camera pictures, silver medal to H. B. Forrer; and stereoscopic slides, silver medal, W. S. Elsworth. In the lantern slide competition the judges had great difficulty in making a selection. Finally it was decided to award two silver medals for equal merit, viz., Joseph Earp and F. Anyon; bronze medal, T. B. Sutton; and the President's prize, open to lady members only, has again fallen to thelot of Miss Rose Collier.

Midlothian.—At the last meeting Mr. A. H. Baird, read an interesting paper on "Flash-light Photography," illustrated with numerous views of the slums of Edinburgh, and gave a practical demonstration of the subject, by the aid of the Todd-Forret flash lamp.

Woodford.—On the 21st inst., President, Mr. H. Wilmer, in the chair, a discussion on "Toning Gelatino-chloride Prints" was opened by Mr. E. Baird, who preferred the combined toning and fixing bath recommended by the Eastman Co. He showed prints toned by this to a rich warm brown and a purple. He said that keeping the paper dry was absolutely necessary in order to obtain uniform results. The secretary, Henry W. Bennett, showed several prints on the Ilford matt P.O.P., expressing the opinion that the new paper was a most valuable advance in photographic printing, combining the advantages of gelatino-chloride with a drawing-paper surface. He advocated the use of borax toning bath in preference to the sulphocyanide usually recommended, purer red and brown tones being obtainable with an entire absence of blue half-tones that sulphocyanide frequently gives. He said that pure sepia tones could not be obtained by gold toning at all, a red-brown or a purple-brown being the nearest approach. He showed a print toned with platinum to a colour closely resembling sepia-platinotype, the toning bath being—

Potassium chloro-platinite...	1 gr.
Hydrochloric	4 minims
Water	4 oz.

For this bath prints must be very deeply printed and toned until almost black, as they lose both colour and depth in the fixing bath. Mr. H. T. Malby had always used a sulphocyanide bath but preferred separate toning and fixing. In regard to the toning and fixing bath he said that he had specially prepared some prints in order to test their permanency, they were all toned in the combined bath to the same colour, some being afterwards refixed in a plain hypo bath for about ten minutes. All the prints, after washing and drying were put loosely away for two years where the air had free access to them—those that had been refixed were as fresh and bright as when first made, the others badly spotted all over.

SOCIETIES' FIXTURES.

Dec. 28.—ASTON—Tea and Lantern Evening.
,, 28.—HEREFORDSHIRE—Lantern Evening.
,, 28.—HOVE—"Intensification and Reduction," by G. Foxall.
,, 28.—OLDHAM—Lecture, "Pictures from the Dresden Gallery," by Mr. J. S. Dronfield.
,, 28.—WALSALL—Lantern and Musical Evening.
,, 29.—HOLBORN CAMERA CLUB—Informal Meeting.
,, 29.—CROYDON—Technical Evening.

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Jan. 1.—RICHMOND—Lantern Evening.
,, 1.—SOUTH LONDON—Lantern Evening, "Eastward Bound," Mr. F. J. Lewis.
,, 2.—BEVERLEY—Lecture by F. Bond, "Gothic Architecture."
,, 2.—WEST LONDON—Technical Meeting, Lantern.
,, 3.—PHOTOGRAPHIC CLUB—"Clouds," Mr. Birt Acres.
,, 3.—W. SURREY—Paper and Demonstration by Geo. H. James on "Carbon Printing."
,, 3.—CROYDON—"How to Use a Lens," G. P. White.
,, 3.—WALTON—Demonstration, "Reduction by Ordinary Camera," Mr. Jas. Kennedy.
,, 4.—LOUGHBOROUGH—"Bromide Printing," W. C. Burder, Esq.
,, 4.—LEIGH—AMATEUR PHOTOGRAPHER Prize Prints.
,, 4.—LEEDS—In the Club Room.
,, 4.—EALING—South African Lantern.
,, 5.—LEWISHAM—Demonstration of the Paget Prize Lantern Slides, Mr. S. Herbert Fry.
,, 5.—CARDIFF—Ilford Matt P.O.P.

EDITORIAL.

SPECIAL NOTICE.—Letters requiring an answer in this column must be received by the first post on the Tuesday morning prior to publication. The Editor cannot answer letters by post except under exceptional circumstances.

W. JAMES.—We are awfully sorry, but we cannot publish your letter this week, time and circumstances will not permit—next week we may.

MILTONIAN AMATEUR.—When a lens is racked out to copy an object the same size, the focus is doubled, and the aperture halved, so that *f*/8 would become *f*/16. Use the rapid plates, and about five minutes exposure in the morning, with small stop *f*/32, and for the magnesium about 3 in. on each side of print. We shall be glad to have you as competitor any time.

G. HARTMAN.—The address of Williams and Co, makers of the ever-ready pencil, is 90, Hatton Garden, E.C. To mount your print, you must use an alcoholic gelatine mountant, but it is almost worth while printing again on the new paper, the mounting is so easy.

IGNORAMUS.—The spots are nothing but freckles. They could be retouched, and it would then give a capital print. "Does the blue glass, sent out with the Watkins exposure meter, make any difference in the time it takes to discolour?" No; the time is actually the same.

MORE LIGHT.—Must write you by post.

EGROEG YELIR.—Probably Percy Lund and Co., Memorial Hall, E.C., could supply the forms and give you information as to remuneration. We are sorry, but we do not know how the system is worked. You are perfectly correct in your assumption as to the gold being exhausted, and this being the cause of the horrid tone. The composition of group is good, but we should have liked to see it rather smaller and a margin at each side.

M. R. C.—Your negative was received broken. Over-exposure is the cause of the water, sky, and distance being so faint. There is nothing to be done now, you can only print it as a mist effect.

G. A. H.—The fault lies in the method of development. If you will use the Paget Company's formula, you will get all the tones and good prints you want.

J. G. HENDRICK.—Your letter is characterised by that coarse vulgarity and abuse we had expected of you. You state that no such persons as Williams and Co. exist. Well, go to 90, Hatton Garden and on the top floor you will find Williams, Welch, and Co., where you can get what you want. If you do not we will apologise to you. If you do you ought to apologise to us, but we do not suppose you have enough good taste to do so.

J. B.—There is no need to ask permission to photograph the exterior of the palace. The interior cannot be taken. The exposure depends so much upon the light, negative, etc., that we can give you no help. Try with some small strips of paper, starting with 30, 60, 120, 360, and 720 secs.

DAVID B. JACK.—We are sorry slides were in such a state, and are much obliged to you for all the trouble you have taken.

MATT SURFACE has squeegeed some P.O.P. prints to ground-glass and the prints will not strip. This is a hopeless job if soaking in cold water has been tried. The prints are lost and had better be stripped off with boiling water and glacial acetic acid; and turn to matt P.O.P.

UNIT.—(1) "An unmounted silver print, rather badly greased, has been given me to copy; would you tell me the best way of doing the task?" In the first place, it would be advisable to remove the grease, and for this purpose we should place one or two thicknesses of good white blotting paper on a table and sprinkle the top one with French chalk, then lay the print on it, cover the print with French chalk, put a piece or two of blotting paper on it, and then use a moderately hot flat iron with pressure, when the grease will be driven out into the chalk. If not wholly removed, the print may now be treated with benzole, either by total immersion or by pouring the benzole through it, which will gradually remove the remaining traces. This should be done out of doors. Then the print may be copied in the usual way with a rapid plate. (2) "Where are good instructions in process work to be met with?" There are only three English books on the subject—"Collotype," by Schnauss, translated by Middleton; and "Photo-engraving and Photo-mechanical Work," by W. T. Wilkinson, both price 5s.; and W. K. Burton's "Printing and Photo-mechanical Printing."

C. S. CLARK.—The address is Williams, Welch, and Co., 90, Hatton Garden, E.C., and the firm is perfectly *bona fide* so far as we know, and address correct.

A. J. W.—We must write you by post.

G. R. STEPHENS.—We have handed your print to someone we can trust to do the work properly, and as soon as we get his report we will let you know. There are certain difficulties in the road, as there are two distinct types of fading present, but if it is possible we should strongly recommend you to have it done.

MICRO.—The results you have obtained are very good, Nos. 1 and 5 might be improved by a little longer exposure.

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